ALASKA

POTABLE WATER SYSTEM

REHABILITATION

September 1972

GODDARD SPACE FLIGHT CENTER

Greenbelt, Maryland

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1. WORK SUMMARY

1.1 WORK ACCOMPLISHED

Extensive tests were run on the wells at the Alaska building, Minitrack building, Gilmore building, and R&RR building. The old treatment plants at Gilmore, Minitrack, and R&RR buildings were also extensively tested. Following this testing the Gilmore and Minitrack treatment plants were totally dismantled. All items capable of salvage were further dismantled, cleaned, repaired, and calibrated. Totally new plants were designed and built at Minitrack and Gilmore. The Alaska building new plant was modified in several areas. Operational schedules for the Alaska building new plant, the new plant at Gilmore, and the new plant at Minitrack were tested and posted in each plant. One diesel unit cooling system was cleaned and treated. The scaling problem in the Alaska building air conditioning-heat exchanger was resolved.

1.2 DEFICIENCIES FOUND

Several deficiencies were found in the plants before rebuilding and modification. The major deficiencies were as follows:

a. Backwashing the filters was accomplished with untreated water, thus contaminating the filter media both at the top and bottom.

b. Improper chemical feed concentrations were applied. As a result the plants were operating with minus-stability indexes, permitting extensive corrosion to occur. Specimens of some of the corroded piping were saved to illustrate the extent of the corrosion attack. The Station Director sent several specimens to the Goddard Space Flight Center.

c. The water, in some cases, was softened to 0.0 ppm hardness making it more unstable.

d. Each well pump had an output gpm far above the flow capacity of the treatment plant it served. The high flow overloaded all filter media.

e. Probably the root of all the deficiencies was inadequate testing and care of the treatment plants due to the lack of man hours available for these specific tasks.

1.3 ALASKA STATION WELLS

This report contains a complete record of tests on the untreated water of each well at the Alaska station, and discusses the great variations in the various well waters. These wells are all located within a 1-mile radius. The great differences in iron, sulfates, hardness, alkalinity, carbon dioxide, hydrogen sulfide, and manganese contents make different treatment processes necessary (refer to appendix A).

1.4 GOOD WATER PLANT PERFORMANCE REQUIREMENTS

1.4.1 It is imperative that a very strict schedule of testing and maintenance of the treatment plants be maintained. The key factor for good plant performance is properly trained and scheduled personnel. The Alaska station complex must have one such analyst. Appendix B, pages 1 through 3, details the work and time requirements for the Alaska station analyst.

1.4.2 The treatment plants at Alaska are capable of providing a very limited supply of good potable water. The use of treated water must be restricted to that required by the station personnel for personal use only. Treated water cannot be used for watering lawns, washing equipment, or contractor use. None of the treatment plants were designed or built to provide such quantities of water. Water for contractor use, watering lawns, and washing equipment must come from the Gilmore Creek, the old Alaska well, or other sources. In addition, all leaking faucets, water bowls, etc., must be corrected as soon as noted. The Station Director has issued a station memorandum directing that treated water will not be used for lawn watering, equipment washing, or contractor requirements.

1.5 WATER TASTE AND COLOR

1.5.1 The taste of one water sample can generate five different comments from five tasters. Pure distilled water is tasteless and flat. Organics, gases, and metals in water affect the taste pattern. The Alaska station wells contain various levels of these elements that the treatment plants cannot remove. In addition, the distribution systems within the buildings are extremely contaminated by iron and corrosion products which tend to make good water distasteful. The lack of time and materials prevented internal cleaning of the distribution systems. Should a taste problem arise, small disposable activated-carbon filters placed immediately in front of the water taps that provide drinking and cooking water would be beneficial.

1.5.2 Several wells provide water with faint colors. Neither the iron filters nor the softeners will remove the color. The color can be removed along with the taste by activated-carbon filters placed immediately in front of the drinking and cooking water taps.

2. BACKGROUND INFORMATION

2.1 PORTABLE LABORATORY

The portable laboratory was indispensable in this total operation. It allowed timely tests to be made, as well as rechecking any questionable results immediately. Certain tests cannot be run except at the site or at the testing point: pH must be tested preferably within 15 seconds of the sample being drawn; pheno and total alkalinity must be tested very quickly because they change with exposure; and gaseous tests such as carbon dioxide, dissolved oxygen, and hydrogen sulfide require immediate testing. Test results varied as pump pressures, chemical pump feed rates, temperatures, and other pertinent factors changed. The portable laboratory permitted all facets to be worked out to a very fine degree. All of the laboratory results are recorded in tabular form in the appendixes. The new plants were designed and the new Alaska building plant was modified from these test results. After the construction, additional testing permitted chemical balancing that held corrosion/scaling tendencies to a minimum. The tests made it possible to achieve a good stability index, one near 0-0, on each of the plants, which minimized the effects of corrosion and/or scaling. The portable laboratory was indispensable to the total operation at the Alaska station.

2.2 WORK FORCE

The task force involved in the modification and building of the treatment plants consisted of four temporary hires and many members of the station's permanent party on an intermittent basis. Two plumbers and two helpers were hired as temporary workers during the modification and construction phases. The workload on these four plus the station's electricians, draftsman, plumber, carpenter, and staff was extremely heavy. The technical and operational expertise and assistance of Mr. Duncan Plowman was extremely valuable during the entire period.

2.3 VARIATIONS OF THE ALASKA STATION WELL WATERS

The five wells involved in the Alaska station work (refer to appendix A) are contained within a 1-mile radius; however, there were great variations in iron, sulfates, alkalinity, carbon dioxide, hydrogen sulfide, hardness, and the other metallic elements in the waters. One treatment plant could not have been designed and applied to Alaska, Minitrack, and Gilmore; each well had to have its own particular treatment in order to combat the detrimental elements and provide good stable water.

2.4 MAJOR PROBLEMS ENCOUNTERED

2.4.1 The iron content in the well water from Minitrack varied between 17 ppm and 22 ppm on a series of tests. At Gilmore it varied between 5.0 and 7.5 ppm. Normally when the iron content of water is over 3.0 ppm the water is aerated, i.e., sprayed into the air where the iron is oxidized; the majority of this oxidized iron is then removed with large sand filters. The Alaska winters make aeration impossible and the plants must be closed. Closed plants have problems if the total iron content of the water exceeds 3.0 ppm. Iron fouls filters faster than other metallic elements, tastes bad, and stains everything.

2.4.2 The Langelier index of 0.0 indicates that the water is stable and does not tend to corrode or scale. The degree of corrosive or scaling tendency depends upon how far the index moves away from 0.0. At Alaska, minus indexes below minus 2.0 were found; this is very corrosive. The balancing of the treatment plants was conducted to achieve an index slightly on the positive side of 0.0.

2.4.3 There were great quantities of corrosion products in each of the dismantled plants. In the bases of several holding tanks 40 inches in diameter, 18 inches of iron slime had collected. Pipes were eaten completely through at the threads and instrumentation was completely jammed with corrosion products.

2.4.4 During the study of the old treatment plants, design deficiencies became apparent as follows:

a. Untreated well water high in iron content was used to backwash filters and softeners. This jammed the filters and softeners from the bottom as well as from the top and rendered them absolutely useless.

b. Each well pump produced a flow rate orgpm far in excess of what the treatment plant was designed to carry. The new treatment plant in the Alaska building can handle less than 30 gpm. The well pump was putting about 60 gpm into this plant. The old Gilmore building treatment plant and the new Gilmore building treatment plant can handle only about 4 gpm. The Gilmore well pump put out approximately 18 gpm. The old Minitrack building treatment plant could handle about 5 gpm. The new Minitrack building treatment plant will be able to handle a maximum of 12 gpm. At Minitrack the well pump put out about 80 gpm. Treatment plant filters are designed to handle a certain maximum flow. When this flow is exceeded the filters tend to become jammed beyond the capability of the backwash stream to clear the filter media. Each well pump at the modified plants had to be severely throttled to bring the flow down to the plant's capability.

c. The wide-spread belief that zero hardness in a water is a very good condition is very misleading. For laboratory work and certain testing it can be an asset, but zero hardness lowers the Langelier index in most cases to the negative side of 0.0 and makes the water corrosive. The by-passes on the softeners of the three plants are able to divert some of the water around the softener and then mix the two streams to achieve a blend that assists the stability of the water.

d. Each water treatment plant at the Alaska station is handling very corrosive and iron-contaminated water. The plants must receive the attention specified in this report as a minimum in order to produce good potable water. There are no short cuts. (Refer to appendix B, pages 1 through 3.)

3. ALASKA BUILDING WELLS AND TREATMENT PLANTS

3.1 OLD WELL

The well water (refer to appendix C, page 1) is very high in iron and is no longer used for potable water. It is tied into the faucets on the outside of the building for non-potable water usage. This saves overloading the new treatment plant.

3.2 OLD TREATMENT PLANT

The deficiencies of this plant before dismantling have been listed in section 2.4.4. It was producing non-potable water. (Refer to appendix C, page 2.)

3.3 NEW WELL

The new well is a good well; the iron content is below 2.0. The total hardness and calcium hardness is high enough that, by partial by-passing of the softener, it can be brought into the proper range for a good stability index. The natural alkalinity of the well is high enough that, assisted by the injection of sodium carbonate, it can also be adjusted to build a good stability index. The one noticeable detrimental ingredient in the water of this well is the very high sulfate content which approaches 200 ppm. This is not removed either in the iron filter or the softener and can affect the taste of the water. (Refer to appendix C, page 3.)

3.4 NEW TREATMENT PLANT

3.4.1 This plant, the largest of the Alaska station treatment plants, has a rated capacity of 25 gpm. The treated water is potable and has a stability index of plus 0.3. (Refer to appendix C, pages 4 through 24.)

3.4.2 This new plant had several deficiencies which were corrected as they were located. Major deficiencies and corrections were as follows:

a. The water meter was placed immediately beneath another pipe and was difficult to read. The installation of a programmed wall would isolate the meter completely and make it impossible to read. In addition, the meter was not recording all the water treated by the plant. The meter was relocated to overcome these deficiencies.

b. The softener was producing 0.0 ppm hardness making it impossible to achieve a noncorrosive stability index. This was overcome by a by-pass around the softener which permitted a dilution of the hard and zero hardness water, thus aiding the stability index.

c. The contractor's chemical treatment was extremely unstable. This was corrected by major changes in the chemical feeds. These changes are detailed in appendix C, pages 10 through 18.

4. MINITRACK WELL AND TREATMENT PLANT

4.1 MINITRACK WELL

This well water (refer to appendix D, page 1) will be difficult to control. An extremely high iron content, approaching 20 ppm, requires an additional workload for proper plant operation. The high iron content in the present well may be a result of the fact that the casing is perforated far below the surface; surface water, high in iron content, runs into the well. The pump delivers mixed surface and underground water into the plant.

4.2 OLD TREATMENT PLANT

The design deficiencies of this plant are listed in section 2.4.4. It was delivering nonpotable water. (Refer to appendix D, page 2.)

4.3 NEW TREATMENT PLANT

The new treatment plant (refer to appendix D, pages 3 through 8) was designed as a continuous pressurized system due to the immediate backwashing sequence of the rebuilt iron filters. It was impossible to put a holding tank large enough in the system to handle this sequence. The pressurized system was a compromise. The holding tank would require about 1500 gallons of water for the sequence type backwashing; therefore, the pressure plant was chosen as a design. This plant will require special and continuous attention in order to keep it operating properly.

5. GILMORE WELL AND TREATMENT PLANT

5.1 GILMORE WELL

The test results of the Gilmore well are tabulated there. The stability index of the well water is quite corrosive. The hardness, pH, and alkalinity are very low (refer to appendix E, page 1).

5.2 OLD TREATMENT PLANT

The old treatment plant at Gilmore (refer to appendix E, page 2) was in a complete state of disrepair. The tanks and treatment facilities that filled the utility room were corroded and fouled with iron to the point that the entire plant was absolutely useless. Untreated well water would have been no more harmful to the system than that water coming from the old treatment plant.

5.3 NEW TREATMENT PLANT

This is not a totally pressurized plant; it is broken with a vented holding tank. This is possible because the backwashing is not sequencing as it is in Minitrack. The new plant has larger iron filters, combination by-passes on the softeners, and more chemical injection capability. This plant, with proper care, will be able to give good service (refer to appendix E, pages 3 through 5).

6. R&RR WELL AND TREATMENT PLANT

6.1 R&RR WELL

The smallest demand for the Alaska station is made upon this well, which does not exceed 150 gallons per day. The well was tested and analyzed in detail for future reference. The waters are high in dissolved carbon dioxide and very corrosive. The well water is also very high in entrained gases which disappear within 60 seconds when the water is exposed to atmospheric pressure. (Refer to appendix F, page 1.)

6.2 TREATMENT PLANT

There was no dismantling or modification work done on this treatment plant during the period covered by this report; it was not requested nor was there time to do such work. The treatment plant was tested to the maximum extent possible. Sampling points were not of a suitable type nor were they located in the right places. The data was accumulated on the treatment plant for future use. (Refer to appendix F, page 2.)

7. DIESEL COOLANT SYSTEM CLEANING

7.1 UNIT FOR CLEANING

The diesel selected for coolant cleaning was unit No. 1, a 500-kW Caterpillar in the new power plant. The coolant system is divided into two major parts: the jacket water system which contained untreated water and the radiator circulating system which contained glycol antifreeze.

7.2 PREPARATION

The preparation for chemically cleaning and treating a diesel coolant system consisted of several parts as follows:

a. By-pass feeder tanks were installed around a pressure differential in each of the two systems. The pressure differential permits a very small part of the main circulating stream to run through the by-pass feeder. From this feeder, specimens can be drawn off to be tested for the treatment potency and treatment can be added to bring the potency up to the required level.

b. Low points in the two circulating systems were already available to drain the system, inject flushing water, pump in the alkali or acid cleaner, as the case may require, and refill after the cleaning cycle is completed.

c. Thermometers were installed across each system in order to assess the effectiveness of the cleaning after it was completed.

d. An alkali or acid cleaning solution that could not be dumped into the stream or on the ground before neutralization was collected in 55-gallon drums. A pump was provided to force the cleaning alkalies and acids into each of the systems. Protective clothing for two men was provided.

e. The four-man team was assembled and the cleaning procedures were reviewed in detail. All the critical points on the engine were checked. A checklist of items necessary for the cleaning task was used to assemble those items.

7.3 CLEANING

The cleaning operation lasted 15 hours. There was so much sludge pumped out of the two cooling circuits after the alkaline cleaning it was decided the second phase, acid cleaning, would be postponed until the alkaline cleaning could be assessed. The alkaline cleaning was rated 80 percent successful. Details of the cleaning procedure were as follows:

a. Calculated dosages of "alkaline boil-out" chemical were pumped into the two circuits for a 5-hour run. The temperature of the coolant was held between 150° and 180° F.

b. Circuits were drained and recharged with a mild neutralizer. A 30-minute run was made at 150° F. Chemical tests were made.

c. Circuits were drained and filled with fresh water. A 30-minute run was made at 150° F. Chemical tests were made.

d. Circuits were drained and filled with water containing 1500 ppm of borate nitrite. A 1-hour run was made at 150°F and shut down for 2 days.

e. The circuits were drained. The radiator circuit filled with glycol containing 1500 ppm of borate nitrite. The jacket circuit filled with water containing 2000 ppm of borate nitrite.

f. Chemical tests to check potency of the treatment chemicals were made.

8. AIR CONDITIONER-HEAT EXCHANGER SCALE CONTROL

8.1 SCALE CONTROL

The humidity for the large A/C unit in the Alaska building is controlled by a water spray immediately in front of the heat exchanger. The calcium and magnesium carbonates in the old Alaska treatment plant water were deposited on the exchanger as the water was evaporated, causing reduced thermal transfer. Cleaning was formerly accomplished by chipping off the scale.

8.2 METHOD

The original acid cleaning plan was abandoned because of the slight possibility of acid fumes being carried into the equipment rooms. A softener was installed in the water line immediately in front of the spray nozzles. The softener will furnish water of zero hardness, which will eliminate the formation of scale.

9. MISCELLANEOUS NOTES

9.1 EQUIPMENT REBUILT AND REUSED

9.1.1 Old Alaska plant iron filters are now at Minitrack because of greater capacity than the old Minitrack filters. Interim auto backwashing capability was added.

9.1.2 Old Minitrack plant iron filters are now at Gilmore because of greater capacity than the old Gilmore filters.

9.1.3 One old Gilmore plant iron filter was modified and is now in use as a softener in the Alaska building air-conditioning system to prevent scaling.

9.1.4 The idle holding tank on the Gilmore Creek water system was modified and now serves as the pressure tank in the new Gilmore well water-treatment plant.

9.1.5 The 220-gallon holding tank from the old Minitrack plant now serves in the new Gilmore plant. It replaced an identical tank from the old Gilmore plant which was corroded beyond acceptable use for a water treatment plant. The replacement tank is in marginal condition.

9.1.6 Level switches now on the Gilmore holding tank were once part of a vapor-phase heating system. They were modified for the current task.

9.1.7 All used valves, fittings, and pipe that could be salvaged were cleaned and reused.

9.2 CORROSION CONTROL

Water treatment plants are designed with two features considered: hydraulics and chlorination. Little consideration is paid to the most disruptive and destructive aspect of the water, the corroding or scaling potential. These potentials can be regulated by adjusting the Langelier stability index. The index is calculated by using the pH, calcium hardness, total alkalinity, total dissolved solids, and water temperature as factors. The Alaska, Minitrack, and Gilmore plant waters were chemically treated to approach a plus 0.3 stability where corrosion and scaling tendencies were minimized.

9.3 WATER TREATMENT PLANT EMERGENCY CONDITIONS

The following conditions should receive a high priority response:

a. Loss of treatment chemical where the tank mix drops to the outlet strainer.

b. Failure to observe backwash schedule which will contaminate filter media beyond recovery. Recovery and nonrecovery is separated by a very thin margin.

c. Backwash line discharge during service operation.

d. Backwash effluent containing filter media.

e. Improper chemical treatment including misweighing, treatment chemicals, solution errors, pump plunger errors, and pump malfunctions.

9.4 STABILITY INDEX RELIABILITY

It is very difficult to predict with a high degree of certainty the scale-forming or corrosive tendency of potable waters. One approach to such a prediction is the Langelier or saturation index. Controlling certain properties of the water such as pH, alkalinity, and calcium hardness permits manipulation of the actual pH to where it is brought into coincidence with the saturation pH and achieves stability. Keeping a stability index near 0.0 is a very fine balancing task; however, there are ingredients in water which tend to partially invalidate the value of achieving a 0.0 Langelier index as follows:

a. The saturation index prediction is reasonably sound for steel, iron, copper, brass, and lead. It is of no value for aluminums and stainless steels.

b. A high sulfate plus chloride content reduces the reliability of the index. All Alaska station plants are low in chlorides but the sulfates in the new Alaska building well water are high.

c. Total dissolved solids higher than 150 ppm reduces the reliability of the index. All Alaska station plants exceed this. By hydrometer they average 800 ppm but the hydrometer is very inaccurate below 2000 ppm.

d. A positive saturation index can cause corrosion if the carbon dioxide content is high. The Alaska station plants are all relatively high regarding CO_2. The Gilmore well produces water with over 30.0 ppm of CO_2 as CO_2.

e. High sodium alkalinity will tend to prevent calcium carbonate deposition. The Alaska plants all carry higher sodium carbonate levels than average.

f. The stability index does have its shortcomings but it is the best tool we have.

9.5 BACKUP ANALYST

Due to the fine balance that must be maintained on the water chemistry, the chemical treatment and testing and the backwashing must be uninterrupted and on schedule. They must not be missed during vacations or other absences of the analyst. A backup analyst must be checked out and available.

9.6 FAIRBANKS MUNICIPAL WATER PLANT

Finished water analyses from the Fairbanks Municipal Water Plant can be used for comparison with the Alaska stations. Fairbanks analyses are as follows:

pH	8.3 - 8.7
Alkalinity	90 ppm
Sulfates	50 ppm
Total Hardness	130 ppm
Ca Hardness	90 ppm
Stability Index	0.0 to +0.5

10. DAILY REPORTS

The daily reports detail the progress of the work from start to completion. (Refer to appendix G, pages 1 through 91.)

11. PICTURES

Pictures showing the old and new plants are provided in appendix H.

12. RECOMMENDATIONS

12.1 ALASKA BUILDING WELLS AND TREATMENT PLANTS RECOMMENDATIONS

12.1.1 The treated water should be used only for personal use in the Alaska building.

12.1.2 The output of the well pump remained throttled as it is now to maintain a flow no greater than 25 gpm. If this pump is ever renewed, it should be replaced with a pump with a capacity in the 25-30 gpm range (refer to appendix C, pages 19 and 20).

12.1.3 The chemical feed concentrations and the limits of the various chemical tests should be maintained by scheduled testing and observation on a twice a week basis, preferably Tuesday and Friday. The chemical feed concentration listing and the limits of the chemical tests, both high and low, are posted in large block letters and figures on the wall in the treatment plant (refer to appendix C, pages 7 and 8). Backwashing should be accomplished according to posted schedule (refer to appendix C, page 9).

12.1.4 Consideration should be given to the installation of small disposable or rechargeable line-type filters of activated carbon immediately in front of the kitchen or lunch room faucets and immediately in front of the water coolers. These filters will control the taste problem that some users may notice.

12.1.5 The new piping added in the modifications and the sections of piping uncovered for the modification work should be covered at the earliest opportunity.

12.2 MINITRACK WELL AND TREATMENT PLANT RECOMMENDATIONS

12.2.1 A new well should be considered for the Minitrack building. In the long run, a new well with a lower iron content would be a more economical operation.

12.2.2 Continuous and strict attention should be paid to the usage of the treated waters, the chemical testing, and feeding and backwashing of the filters of this plant as posted. (Refer to appendix D, pages 6 through 8.)

12.2.3 The treated waters should be used only for personal use in the Minitrack building.

12.2.4 At some practical time the softener and the pressure tank should be sanded internally and coated with Tarmastic.

12.2.5 The softener is oversized for the flow rate and cannot be backwashed in a normal fashion. Approximately once a month it should be backwashed using the high-pressure, high-flow capacity of the fire truck. The plumbing to do this work is installed, the system was tested and found very satisfactory. The station analyst was checked out on the procedure.

12.2.6 Consideration should be given to inserting disposable or rechargeable activated carbon filters immediately in front of the taps providing drinking water.

12.2.7 The single backwash control element on the iron filters is a poor compromise for individual controls. Individual control elements should be placed on all three iron filters. This would eliminate a backwash problem that complicates the operation of the plant. Data on replacement will be sent to the STADIR within 30 days of this report date.

12.3 GILMORE WELL AND TREATMENT PLANT RECOMMENDATIONS

12.3.1 Consideration should be given on a routine basis to replacing the 250-gallon holding tank. There was not time to obtain a new one and the one in use is corroded to a degree beyond acceptability. The new tank should be an exact duplicate of the old one in order to facilitate quick positioning in the new plant flow system. The new tank should be coated internally with Tarmastic and forced-air dried before it is installed.

13.3.2 Chemical treatment and backwashing should be adhered to as posted. (Refer to appendix E, pages 6 through 8.)

12.3.3 Before the new water heater is tied into the system the hot water lines should be flushed with a heavy flow and a 50-psi pressure from the fire truck. This mechanical type flushing will remove some of the iron and manganese slime in the lines. Time and stable water flow should slowly remove the remaining slime.

12.3.4 Consideration should be given to inserting disposable or rechargeable activated carbon filters immediately in front of taps providing drinking water. Such filters are capable of removing slight tastes and color in water that the iron filters and softeners cannot remove.

12.4 R&RR WELL AND TREATMENT PLANT RECOMMENDATIONS

Consideration should be given to designing a replacement treatment plant. In the meantime no small or single measure will help appreciably or for long. A near sufficient number of softeners and filters remain unused at the Alaska station to build a new plant for the R&RR building. Several auto backwash controls would have to be purchased.

12.5 DIESEL COOLANT SYSTEM CLEANING RECOMMENDATIONS

Due to the great volume of deleterious residue flushed from the two cooling circuits of the No. 1 diesel, a total cleaning and treatment program should be considered for the industrial water circuits in use at the Alaska station. The industrial water circuits are diesel coolant systems, hot water generators and distribution systems, and chilled water systems. If all plumbing required is completed and all cleaning and treatment chemicals are on hand, the total work could be completed in 4 to 5 weeks next spring. Neglect of the industrial water systems will result in poor thermal transfer loss of metal due to corrosion, possible engine seizure, and abnormal use of heating fuel.

12.6 AIR CONDITIONER-HEAT EXCHANGER SCALE CONTROL RECOMMENDATIONS

12.6.1 The softener should be backwashed and regenerated on a monthly basis or when hardness tests show the softener needs regeneration.

12.6.2 The zero softener water will slowly dissolve the existing scale and pollute the spray pond. The spray pond should be emptied weekly until scale is under control.

12.6.3 Check the heat exchanger on a weekly basis. A change from scaling to corrosion is a possibility with 0.0 hardness.

APPENDIX A. WELL WATER TESTS FOR STABILITY

Well Water Tests for Stability - ALASKA STDN Station   June, July, August 1972

July and August 1972 Tests	Old Alaska Well	New Alaska Well	Minitrack Well	Gilmore Well	R & RR Well	COMMENT:
Fe ppm	5.0	1.4	17.0	2.3	5.5	Unusually high Fe content - Iron problems high when Fe exceeds 3.0 ppm
pH	7.1	7.5	7.1	6.0	6.3	About 8.0 most desirable
Temp ^{o}F	45	46	45	45	48	pH changes with temperature changes
Ca as $CaCO_3$ ppm	106.0	124.0	106.0	62.0	156.0	R & RR has best level
Total Alkalimity as $CaCO_3$ ppm	170.0	134.0	160.0	60.0	188.0	All fairly good except Gilmore
TDS ppm	900.0	900.0	800.0	800.0	1200.0	TDS by hydrometer which is inaccurate below 2000.0
Stability Index	Minus 0.80	Minus 0.50	Minus 0.85	Minus 2.6	Minus 1.8	S.I. by Langelier Formula. All these well waters tend to corrode.

APPENDIX B. WORKLOAD CRITERIA

WORK LOAD FOR MINIMUM EFFECTIVE RESPONSE TO OPERATION
and
MAINTENANCE DEMANDS OF FOUR ALASKA STATION WATER TREATMENT PLANTS

WORK ITEM:	AVER. TIME REQUIRED	FREQUENCY
1. Chemical Tests:		
a. pH	10 minutes	Tuesdays & Fridays
b. $CaCO_3$ Hardness	15 minutes	" "
c. Ca as $CaCO_3$	15 minutes	" "
d. Manganese	20 minutes	" "
e. Iron	10 minutes	" "
f. Chlorine	10 minutes	" "
g. Pheno alkalinity	10 minutes	" "
h. Total alkalinity	15 minutes	" "
i. Clean up	30 minutes	" "
	135 minutes x 4 plants = 540 minutes = 9 hrs.	
Travel between plants	30 minutes	
Records	40 minutes	
	TOTAL = 10 hrs. 10 min.	
2. Chemical Feeds		
a. NaOH	60 minutes	Monthly
b. $KMnO_4$	60 minutes	"
c. $Ca(CIO)_2$	60 minutes	"
	180 minutes x 4 plants = 720 min. = 12 hrs.	
	TOTAL = 12 hrs.	
3. Inventory & Reorder Reagents & Treatment Chemicals	TOTAL = 2 hrs.	Monthly
4. Maintenance		
a. Chemical Feed Pumps, 3 per plant.	4 hours each 12 hours/plant 12 x 3 plants = 36 hrs	Twice Yearly

WORK LOAD FOR MINIMUM EFFECTIVE RESPONSE TO OPERATION
and
MAINTENANCE DEMANDS OF FOUR ALASKA WATER TREATMENT PLANTS con.'t.

WORK ITEM:	AVER. TIME REQUIRED	FREQUENCY
b. Timers and backwash valves	9 hours/unit 5 units in 3 plants 2 units in 1 plant Yr. TOTAL = 153 hrs.	Yearly

TOTAL HOURS PER WEEK = 21:00 TOTAL Hours Yearly = 153
TOTAL HOURS PER MONTH = 14:00
TOTAL HOURS TWICE YEARLY = 36:00
Subtotal per year = 1485 hours

WORK ITEMS THAT SHOULD BE HANDLED BY THE LABORATORY TECHNICIAN

WORK ITEM:	AVER. TIME REQUIRED	FREQUENCY
1. Diesel coolant		
a. Chemical test	15 minutes each 15 x 7 engines = 1 hr. 35 minutes	Weekly
b. Chemical treatment	30 minutes each Est. 4 per week	Weekly
	TOTAL = 3 hrs. 55 min.	
2. Oil tests	30 minutes each 30 x 8 = 4 hrs.	Monthly
3. Hot water generators		
a. Chemical tests	30 minutes each x 6 = 3 hrs.	Weekly
b. Chemical treatment	30 minutes each Est. 3 per week	Weekly
	TOTAL = 4 hrs. 30 min.	

WORK ITEMS THAT SHOULD BE HANDLED BY THE LABORATORY TECHNICIAN con't.

WORK ITEM:	AVER. TIME REQUIRED	FREQUENCY
4. Diesel Radiators Air passages	3 hrs. each 3 x 7 = 21 hrs.	Twice yearly
5. Descaling of Heat Exchangers	2 hours 2 x 2 = 4 hrs.	Monthly
6. Sewage Plant Effluent	4 hours	Weekly
7. Atmospheric corrosion control surface preparation and paint systems	100 hours	Yearly
8. Gages & thermometers	80 hours ***Subtotal-968 hours***	Yearly

All times are average and do not account for unscheduled problems and events.

TOTAL WATER CONTROL:
Weekly - 21:00 hrs.
Monthly - 14:00 hrs.
Semi Yearly - 36:00 hrs.
Yearly - 153:00 hrs.

TOTAL OTHER APPLICABLE AREAS:
Weekly - 10:00 hrs.
Monthly - 4:00 hrs.
Semi Yearly - 21:00 hrs.
Yearly - 180:00 Hrs.

TOTAL HOURS PER YEAR FOR TOTAL PROGRAM - APPROXIMATELY 2400.

APPENDIX C. ALASKA BUILDING COMPLEX POTABLE WATER TESTS

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: OLD WELL FOR ALASKA BLDG. COMPLEX

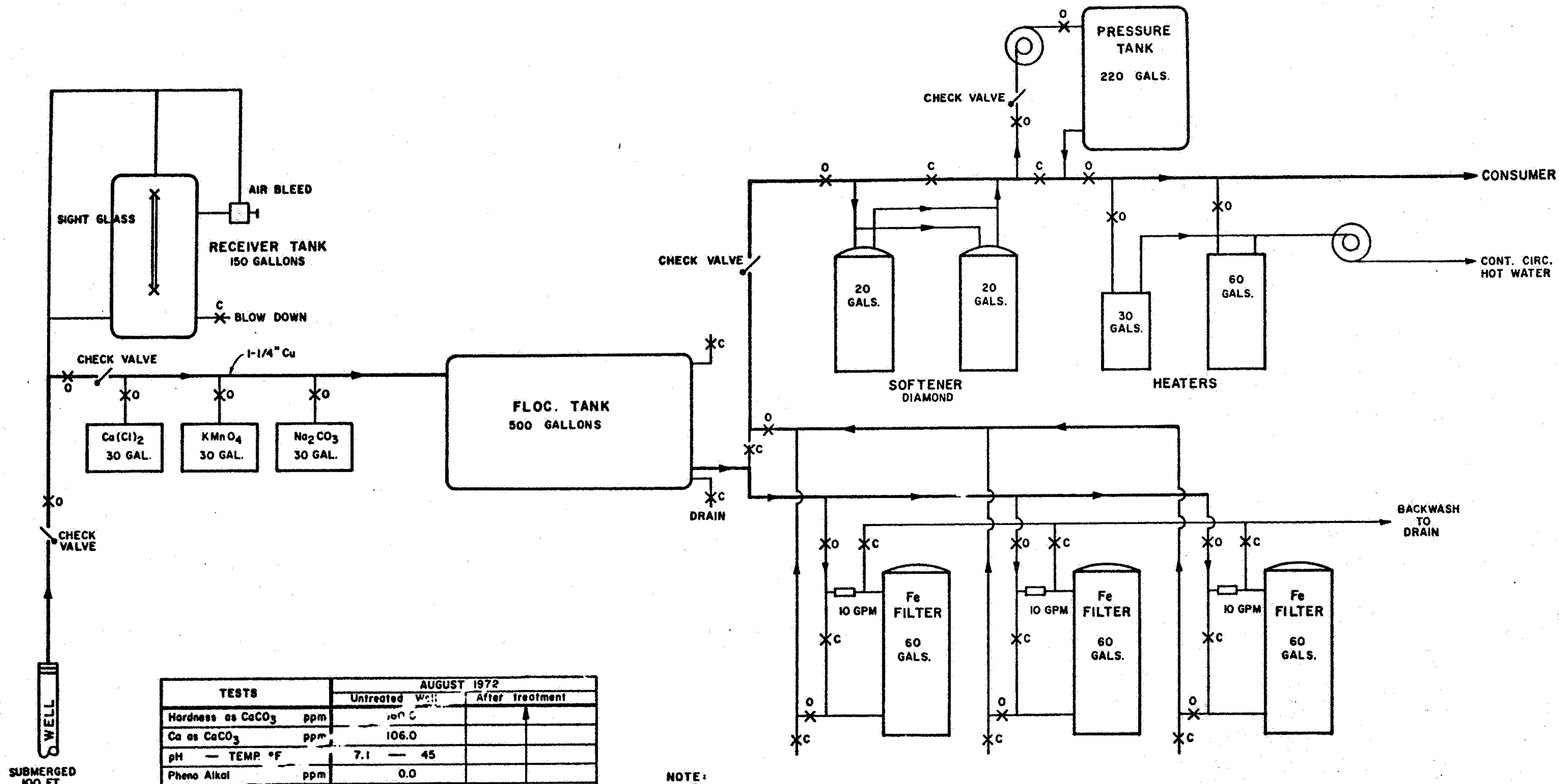
DATE: 27-30 JUNE '72
BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TYPE OF TEST \ SPECIMEN SOURCE	UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP-END OF DIST. SYSTEM	HOT WATER TAP-END OF DIST. SYSTEM		COMMENTS	
HARDNESS AS $CaCO_3$ ppm	160	2	2	2	2	2		HIGH IRON CONTENT MAKES TIRATION END POINT INDISTINCT	
CALCIUM AS $CaCO_3$ ppm	106							HIGH IRON CONTENT MAKES TIRATION END POINT INDISTINCT	
CALCIUM AS Ca ppm	40								
MAGNESIUM AS $CaCO_3$ ppm	54								
MAGNESIUM AS Mg ppm	11								
pH — AVERAGE TEMP. °F	7.1 – 45							SPECIMEN EXPOSED 15 SECONDS AT MOST	
PHENO ALKAL AS $CaCO_3$ ppm	0.0							HYDROXIDE + 1/2 THE CARBONATE ALKALINITY	
METHYL ALKAL AS $CaCO_3$ ppm	170							HYDROXIDE, CARBONATE & BICARBONATE ALKALINITY	
HYDROX. ALKAL AS $CaCO_3$ ppm	0								
BICARB. ALKAL AS $CaCO_3$ ppm	170								
IRON ppm	5.0							IRON IS THE BIG PROBLEM WITH THIS WELL	1
MANGANESE ppm	0.5								1
CHLORIDES AS NaCl ppm	2.0							ACCURACY IN THIS LOW RANGE IS ± 3 ppm	
CHLORIDES AS Cl ppm	1.2							ACCURACY IN THIS LOW RANGE IS ± 3 ppm	
SULFATES ppm	10.0								1
SILICA ppm	21.0								1
COPPER ppm	1.9								1
ZINC ppm	—							NO REAGENTS AVAILABLE FOR ZINC TESTS	1
TDS ppm	900							HYDROMETRIC METHOD NOT ACCURATE BELOW 2000 ppm	
CHLORINE ppm	0.0								
DISSOLVED O_2 mg/l.	0.2								
FREE CO_2 AS $CaCO_3$ ppm	18							INDISTINCT END POINT	
FREE CO_2 AS CO_2 ppm	8.0								
H_2S ppm	1.0	2	2	2	2	2			
STABILITY INDEX	MINUS 2.2								

WELL DATA:

DEPTH IN FEET	151	AVERAGE GALLONS/DAY USEAGE	CONTRACTOR & LAWN USEAGE
CASING SIZE (INCHES)	6	TEMPERATURE INCOMING WATER	45°F
DEPTH OF PUMP	137	PUMP CAPACITY GPM	30 EST.
DEPTH OF WATER	APPX. 20'	PUMP HEAD psi	92 EST.

NOTE:
1 DR DC COLORIMETER
2 NO TESTS—LAB NOT SET UP UNTIL PLANT WAS DISMANTLED.



TESTS		AUGUST 1972	
		Untreated Well	After treatment
Hardness as $CaCO_3$	ppm	160.0	
Ca as $CaCO_3$	ppm	106.0	
pH — TEMP. °F		7.1 — 45	
Pheno Alkal	ppm	0.0	
Methyl Alkal	ppm	170.0	
Hydroxide Alkal	ppm	0.0	
Fe	ppm	5.0	
Mn	ppm	0.5	1
Chlorides as Cl	ppm	1.2	
Silica	ppm	2.0	
Sulfates	ppm	10.0	
TDS	ppm	900.0	
Chlorine	ppm	0.0	
Dissolved O_2	mg/l	0.2	
Free CO_2 as CO_2	ppm	8.0	
H_2S	ppm	1.0	
STABILITY INDEX		MINUS 2.2	

NOTE:
1 NO TESTS — LAB. NOT SET UP UNTIL PLANT WAS DISMANTLED.

VALVE POSITIONS
O = NORMALLY OPEN
C = NORMALLY CLOSED

ALASKA BLDG. POTABLE WATER OLD TREATMENT PLANT — ALASKA
(BEFORE JUNE '72 DISMANTLING)

DRAWN BY: WM. ERKELENS	DATE 29 AUG 1972	SIGNATURE [illegible]
ANALSES BY H. GALL, P.E.	DATE [illegible]	[illegible]
APPROVED BY [illegible]	DATE [illegible]	[illegible]

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: NEW WELL FOR ALASKA BLDG. COMPLEX (BEFORE MODIFICATIONS)

DATE: 26-27 JUNE '72

BY: H. GALL, P.E.

NASA FACILITY ENGINEER: J. ROBINSON, P.E.

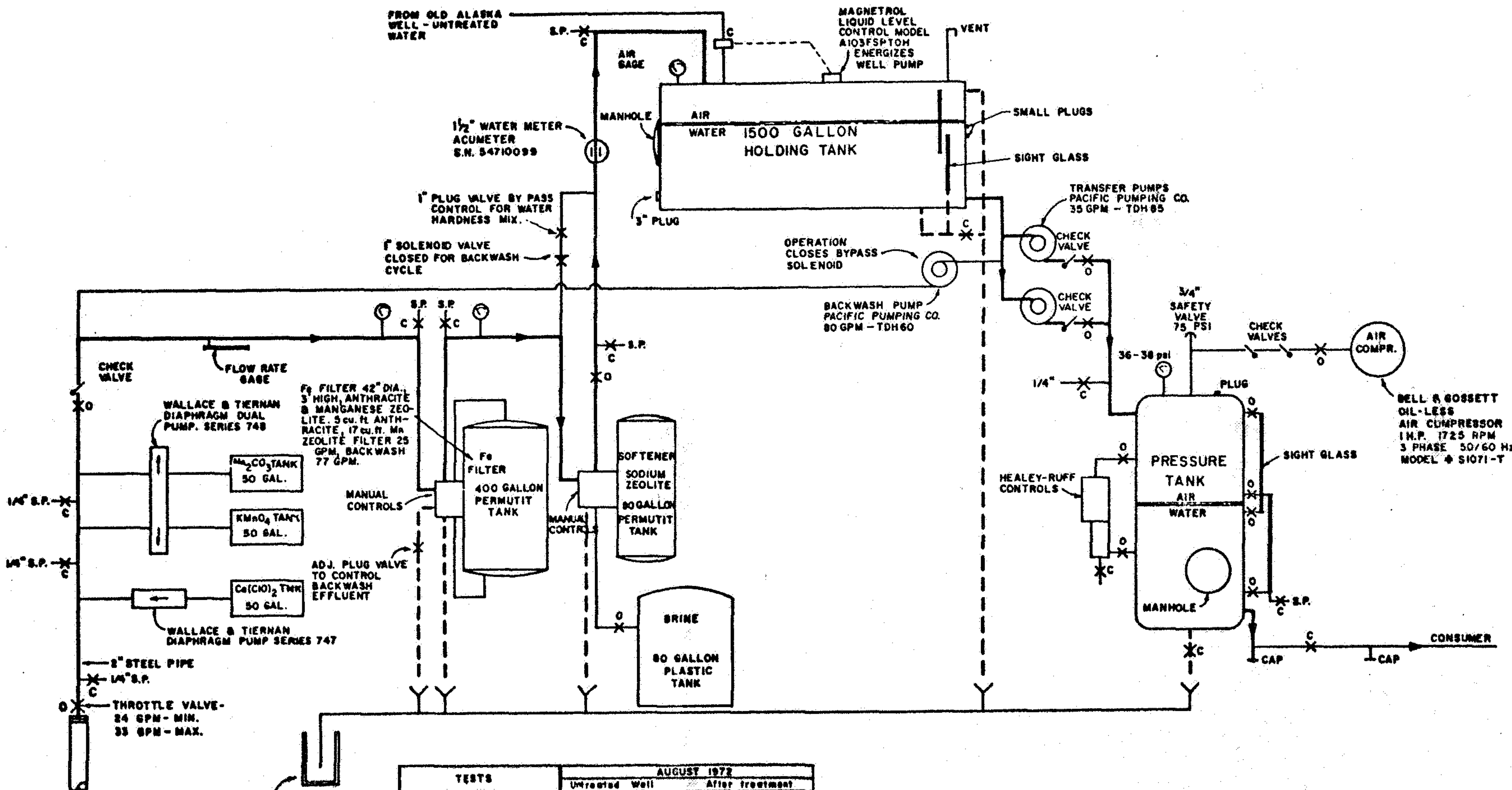
TYPE OF TEST / SPECIMEN SOURCE	UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP-END OF DIST. SYSTEM	HOT WATER TAP-END OF DIST. SYSTEM	AFTER SOFTENER AFTER REGEN. OF SOFTENER. 29 JUNE '72	COMMENTS	
HARDNESS AS $CaCO_3$ ppm	230	250	224	190	184	172	0.0	TESTS DOUBLE CHECKED. SOFTENER READY FOR REGENERATION AT THIS POINT.	
CALCIUM AS $CaCO_3$ ppm	124	172	166	104	106	94	0.0	SEE ABOVE NOTE	
CALCIUM AS Ca ppm	50	69	64	42	42	38	0.0	SEE ABOVE NOTE	
MAGNESIUM AS $CaCO_3$ ppm	106	78	58	86	78	78	0.0		
MAGNESIUM AS Mg ppm	25	19	15	21	19	19	0.0		
pH – AVERAGE TEMP. °F	7.5–46	8.0–47	7.5–47	7.5–48	7.2–50	7.2–100	7.2–50	SPECIMENS EXPOSED 15 SECONDS AT MOST.	
PHENO ALKAL AS $CaCO_3$ ppm	0.0	—	—	0.0	—	—	0.0		
METHYL ALKAL AS $CaCO_3$ ppm	134	—	—	142	—	—	140		
HYDROX. ALKAL AS $CaCO_3$ ppm	0.0	—	—	0.0	—	—	—		
BICARB. ALKAL AS $CaCO_3$ ppm	134	—	—	142	—	—	—		①
IRON ppm	1.4	1.4	0.08	0.2	0.3	0.1	—	DC DR COLORIMETER GETTING 0.1 TO 0.2 ppm LOWER READINGS THAN WHEEL COLORIMETER KIT.	②
MANGANESE ppm	1.0	1.0	1.5	2.8	3.0	2.7	—	PROBABLY A FALSE ppm BECAUSE OF A SLIGHT TURBIDITY	②
CHLORIDES AS NaCl ppm	2.0	2.0	1.0	2.0	2.0	3.0	—	ACCURACY IN THIS LOW RANGE IS ± 3ppm	
CHLORIDES AS Cl ppm	1.2	1.2	0.6	1.2	1.2	1.8	—	SEE ABOVE NOTE	
SULFATES ppm	200	—	160	—	—	—	—	NOT DILUTED AVERAGE OF FOUR TESTS 210, 210, 200, 190	②
SILICA ppm	15	—	—	8.0	—	—	—	DILUTION 5cc SAMPLE 20cc DIST. WATER	②
COPPER ppm	0.2	—	—	—	—	—	—		②
ZINC ppm	—	—	—	—	—	—	—	NO REAGENTS AVAILABLE FOR ZINC TESTS	②
TDS ppm	900	1100	—	800	—	—		HYDROMETRIC METHOD NOT ACCURATE BELOW 2000 ppm	
CHLORINE ppm	0.0	—	—	0.0	—	—			
DISSOLVED O_2 mg/l.	0.2	—	—	7	—	—			
FREE CO_2 AS $CaCO_3$ ppm	16	—	—	10	6.0	0.0	0.0	THE END POINT IS VERY INDISTINCT.	
FREE CO_2 AS CO_2 ppm	7.0	—	—	5.0	3.0	0.0	0.0		
H_2S ppm	0.0	—	—	0.0	—	—			
STABILITY INDEX	MINUS 0.5			MINUS 0.4	—	—	MINUS 2.5		

WELL DATA:

DEPTH IN FEET	160 EST.	AVERAGE GALLONS/DAY USEAGE	1500
CASING SIZE (INCHES)	8	TEMPERATURE INCOMING WATER	42°F
DEPTH OF PUMP	152	PUMP CAPACITY GPM	50
DEPTH OF WATER	APPX. 20'	PUMP HEAD psi	82 EST.

NOTE: ① SEE HIGH HARDNESS FIGURES AFTER SOFTENERS. 16,300 GALLONS TREATED AND THE SOFTENER HAD NOT BEEN REGENERATED. AFTER REGENERATION ANOTHER TEST SERIES WAS RUN, SEE RESULTS IN FINAL COLUMN. WATER METERED FROM WELL UP TO TEST PERIOD: 16,300 GALLONS.

② DR DC COLORIMETER, TEST RESULTS



TESTS		AUGUST 1972 Untreated Well	AUGUST 1972 After treatment
Hardness as $CaCO_3$	ppm	220.2	132.0
Ca as $CaCO_3$	ppm	118.0	88.0
pH — TEMP.	°F	7.5 — 46	8.3 — 45
Pheno Alkal	ppm	0.0	2.0
Methyl Alkal	ppm	130.0	144.0
Hydroxide Alkal	ppm	0.0	0.0
Fe	ppm	1.4	0.08
Mn	ppm	1.0	0.2
Chlorides as Cl	ppm	1.2	2.5
Silica	ppm	15.0	13.0
Sulfates	ppm	200.0	185.0
TDS	ppm	900.0	1300.0
Chlorine	ppm	0.0	0.5
Dissolved O_2	mg/l	0.2	0.4
Free CO_2 as CO_2	ppm	7.0	0.0
H_2S	ppm	0.0	0.0
STABILITY INDEX		MINUS 0.5	PLUS 0.2

BY HYDROMETER

VALVE POSITIONS

O = NORMALLY OPEN

C = NORMALLY CLOSED

ALASKA BLDG. POTABLE WATER NEW TREATMENT PLANT - ALASKA

(AFTER JULY-AUGUST '72 MODIFICATION)

DRAWN BY: WM. ERKELENS	DATE: 5 AUGUST 1972	SIGNATURE: [signature]
MODIFICATIONS BY: H. GALL, P.E.	DATE: JULY 1972	SIGNATURE: [signature]
APPROVED BY: J. H. ROBINSON, P.E.	DATE: 19 AUGUST 1972	SIGNATURE: [signature]

BALANCING TESTS ON THE NEW TREATMENT PLANT

ALASKA BUILDING, ALASKA STDN STATION

SPECIMENS TAKEN FROM LINE TO HOLDING TANK

JUNE, JULY, AUGUST 1972

DATE	pH	Temp.	PHENO ALKALINITY ppm	TOTAL ALKALINITY ppm	$CaCO_3$ HARDNESS ppm	Ca as $CaCO_3$ ppm	Fe ppm	Mn ppm	Chlorine ppm	GALLONS USED TO DATE	COMMENTS
28 JUNE 72	7.2	46	0.0	142.0	230.0	160.0	0.3	–	–	17,100	MANFR. EST BACKWASH & RIGEN AT 30,000 GALLONS. WASH & REGENERATION OVERDUE NOW
29 JUNE 72	7.5	46	0.0	–	0.0	0.0	0.3	–	–	18,087	SPECIMEN TAKEN FROM PRESSURE TANK AFTER BACKWASH AND REGENERATION
30 JUNE 72	7.8	46	0.0	138.0	0.0	0.0	0.1	–	–	19,028	
2 JULY 72	7.6	46	0.0	144.0	0.0	0.0	0.1	–	–	20,793	STABILITY INDEX = MINUS 2.0
3 JULY 72	7.4	46	0.0	128.0	0.0	0.0	0.1	–	0.3	21,645	0.0 HARDNESS IS UNSTABLE
4 JULY 72	7.5	46	0.0	132.0	0.0	0.0	0.05	0.1	0.2	22,779	
5 JULY 72	7.4	46	0.0	132.0	0.0	0.0	0.05	0.15	0.2	23,591	BACKWASH & REGENERATION AT 23,000 GALLONS. BACKWASH WATER NOT COUNTED ON METER.
6 JULY 72	7.6	46	0.0	134.0	0.0	0.0	0.05	0.0	0.2	25,233	INSTALLED BY PASS AFTER SOFTENER FULLY CLOSED.
7 JULY 72	7.5	46	0.0	134.0	0.0	0.0	0.05	0.0	0.2	26,170	BY PASS BY STILL FULLY CLOSED. Fe TEST ON WELL 1.2 ppm
8 JULY 72	7.7	46	0.0	134.0	0.0	0.0	0.05	0.0	0.0	26,821	BACKWASH & REGENERATION SOFTENER AT 26,760
10 JULY 72	7.6	46	0.0	128.0	66.0	54.0	0.03	0.2	0.5	28,364	CRACKED THE SOFTENER BY PASS
11 JULY 72	7.6	46	0.0	134.0	84.0	70.0	0.04	0.2	0.2	29,197	MORE OPENING ON BY PASS
12 JULY 72	7.7	46	0.0	134.0	58.0	34.0	0.05	0.2	0.3	30,311	LESS OPENING ON BY PASS
13 JULY 72	7.8	46	0.0	128.0	106.0	72.0	0.05	0.1	0.5	31,289	NaOH FEED CHANGE
14 JULY 72	7.8	46	0.0	132.0	48.0	30.0	0.03	0.2	0.4	32,030	SILICA APPX. 20.0ppm
14 JULY 72	7.9	46	4.0	134.0	36.0	42.0	0.20	0.2	0.2	32,030	SPECIMENS FROM PRESSURE TANK FOR THIS TEST.
15 JULY 72	7.8	46	4.0	130.0	44.0	28.0	0.05	0.2	0.3	33,000	
17 JULY 72	7.6	46	0.0	132.0	52.0	34.0	0.08	0.6	0.3	34,160	STABILITY INDEX = MINUS 1.0
18 JULY 72	7.8	46	0.0	128.0	76.0	44.0	0.1	0.5	0.3	34,852	INCREASE NaOH FEED
19 JULY 72	7.8	46	0.0	126.0	100.0	68.0	0.06	0.3	0.3	35,819	BACKWASH & REGENERATION SOFTENER AFTER TESTS
19 JULY 72	8.0	46	2.0	132.0	92.0	72.0	–	–	–	37,500	NEW POSITION ON BY PASS. STABILITY INDEX = MINUS 0.2
20 JULY 72	7.9	46	0.0	128.0	102.0	76.0	0.1	0.3	0.4	38,176	STABILITY INDEX = MINUS 0.25
20 JULY 72	8.1	46	2.0	124.0	82.0	58.0	0.2	0.4	0.5	39,607	CHANGED BACKWASH & REGENERATION TIMES. S.I. = MINUS 0.2
21 JULY 72	7.9	46	2.0	128.0	110.0	80.0	0.1	0.2	0.4	41,270	BACKWASHED Fe FILTER AT 40,000
22 JULY 72	7.9	46	2.0	128.0	120.0	86.0	0.05	0.4	0.4	42,300	BY PASS VALVE TOO LARGE, TOO SENSITIVE TO MINOR ADJUSTING.
22 JULY 72	7.9	54	6.0	124.0	110.0	75.0	0.25	0.2	0.1	42,300	SPECIMENS FROM COLD WATER TAP
24 JULY 72	7.8	46	2.0	124.0	116.0	84.0	0.04	0.2	0.4	44,154	NaOH FEED CHANGED
25 JULY 72	7.8	46	3.0	122.0	114.8	84.0	0.05	0.3	0.4	45,130	S.I. = MINUS 0.4

DATE	pH	Temp.	PHENO ALKALINITY ppm	TOTAL ALKALINITY ppm	$CaCO_3$ HARDNESS ppm	Ca as $CaCO_3$ ppm	Fe ppm	Mn ppm	Chlorine ppm	GALLONS USED TO DATE	COMMENTS
26 JULY 72	7.9	46	2.0	122.0	116.0	90.0	0.15	0.2	0.3	46,093	S.I. = MINUS 0.2
27 JULY 72	7.9	46	2.0	128.0	124.0	84.0	0.15	0.2	0.4	47,274	S.I. = MINUS 0.2
28 JULY 72	7.8	46	2.0	122.0	112.0	90.0	0.1	0.5	0.4	48,953	S.I. = MINUS 0.3
29 JULY 72	7.8	46	2.0	130.0	122.0	94.0	0.1	0.3	0.4	50,536	S.I. = MINUS 0.3
31 JULY 72	7.8	46	2.0	132.0	124.0	92.0	0.15	0.3	0.4	52,064	S.I. = MINUS 0.3
1 AUG. 72	7.8	46	2.0	132.0	124.0	90.0	0.15	0.3	0.5	52,787	S.I. = MINUS 0.3 BACKWASHED REGEN. FILTER & SOFTENER
2 AUG. 72	7.9	46	3.0	128.0	120.0	86.0	0.15	0.2	0.5	56,081	S.I. = MINUS 0.2
3 AUG. 72	7.9	46	3.0	128.0	126.0	92.0	0.05	0.3	0.5	57,261	S.I. = MINUS 0.2
4 AUG. 72	8.2	46	2.0	134.0	138.0	84.0	0.05	0.2	0.75	58,600	CHANGE TO Na_2CO_3 FOR pH AND ALKALINITY CONTROL
4 AUG. 72	8.2	46	3.0	152.0	128.0	102.0	0.05	0.2	0.7	59,211	5 HOURS LATER: S.I. = PLUS 0.3
5 AUG. 72	8.3	46	8.0	146.0	130.0	90.0	0.06	0.3	0.4	60,554	S.I. = PLUS 0.3
7 AUG. 72	8.2	46	2.0	144.0	132.0	88.0	0.08	0.2	0.5	61,876	S.I. = PLUS 0.2
9 AUG. 72	8.3	46	2.0	150.0	120.0	84.0	0.04	0.3	0.6	68,160	BACKWASHED 8 AUG. 72 ; S.I. = PLUS 0.3
12 AUG. 72	8.4	46	8.0	150.0	102.0	80.0	0.15	0.3	1.0	71,530	S.I. = PLUS 0.4 DUE TO REDUCTION OF 50 TO 30 GPM AND THE SAME CHEMICAL TREATMENT CONCENTRATION.
12 AUG. 72	8.4	46	8.0	150.0	124.0	80.0	0.22	0.3	0.2	71,530	SPECIMEN TAKEN FROM COLD WATER TAP IN THE BUILDING.
14 AUG. 72	8.4	46	4.0	154.0	132.0	90.0	0.15	0.4	0.6	73,074	S.I. = PLUS 0.4
15 AUG. 72	8.4	46	4.0	154.0	114.0	84.0	0.08	0.3	0.5	74,147	S.I. = PLUS 0.4
16 AUG. 72	8.5	46	6.0	156.0	—	88.0	—	—	0.8	—	
18 AUG. 72	8.4	46	6.0	148.0	108.0	72.0	0.15	0.4	0.4	83,183	17 AUG. 72 — NEW CHEMICAL FEED CONCENTRATIONS
19 AUG. 72	8.5	46	4.0	154.0	120.0	90.0	0.1	0.2	1.0	84,878	1-1/2" PLUG VALVE IN SOFTENER BY-PASS REPLACED WITH 1" PLUG VALVE.
21 AUG. 72	8.5	46	2.0	146.0	116.0	72.0	0.05	0.3	0.5	86,883	MINIMUM ADDITIONAL OPENING ON NEW PLUG VALVE. S.I. = PLUS 0.4
22 AUG. 72	8.5	46	2.0	150.0	118.0	82.0	0.06	0.5	0.6	89,173	S.I. = PLUS 0.5
24 AUG. 72	8.5	46	2.0	156.0	120.0	88.0	0.07	0.3	0.4	92,700	S.I. = PLUS 0.5 ; BACKWASHED

ALASKA PLANT

Tests on specimens from pressure tank.

BY: H. GALL, P.E
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TEST	LIMITS	
	MINIMUM	MAXIMUM
1. CHLORINE	0.2 ppm	0.5 ppm
2. IRON	0.0 ppm	0.3 ppm
3. MANGANESE	0.0 ppm	1.0 ppm
4. CALCIUM HRDNS	60.0 ppm	100.0 ppm
5. PHENO ALK.	0.0 ppm	25.0 ppm
6. TOTAL ALK.	80.0 ppm	140.0 ppm
7. pH	7.8	8.4

item	control by:
1	$Ca(ClO)_2$ PUMP STROKE
2 & 3	IRON FILTER & $KMnO_4$ PUMP STROKE
4	SOFTENER & BY-PASS
5, 6 & 7	Na_2CO_3 PUMP STROKE

ALASKA PLANT

CHEMICAL FEED & CONCENTRATIONS

CHEMICAL	PUMP STROKE	AVERAGE INJECTION INDEX	CONCENTRATION
$Ca(ClO)_2$	12 PER MINUTE	$5\frac{1}{2}$	24 OUNCES PER 50 GAL. TANK
$KMnO_4$	12 PER MINUTE	$5\frac{1}{2}$	9 OUNCES PER 50 GAL. TANK
Na_2CO_3	12 PER MINUTE	$5\frac{1}{2}$	15 POUNDS PER 50 GAL. TANK

ALASKA PLANT
BACKWASH CYCLES

UNIT	FREQUENCY	BACKWASH PERIOD	REGENERATE	
Fe FILTER	EVERY 10th DAY OR ... APPRX. 12,000 GALS.	30 MINUTES	N / A	REWASH 3 MINUTES
SOFTENER	EVERY 10th DAY OR ... APPRX. 12,000 GALS. WITH BY PASS IN EFFECT	15 MINUTES	BRINE 20 MINUTES	RINSE SLOW 10 / 5 FAST MINUTES

ALASKA STDN STATION | NEW TREATMENT PLANT-ALASKA BUILDING

SOFTENER BY PASS

A 1 1/2 inch parallel copper line with a 1 1/2 inch plug valve was installed around the softener to control hardness in treated water. Later a one inch plug valve replaced the 1 1/2 inch unit and a solenoid was added.

DATE	PLUG VALVE CHANGE	TURN DIRECTION	Ca as $CaCO_3$ ppm	COMMENTS
7 July 1972	Closed	N/A	0.0	NaZ softener reduces hardness to 0.0. Very unstable water.
8 July 1972	Approx. 22°	Counter Clockwise	0.0	Plug valve turned 22° but no opening.
10 July 1972	Plus 10° to 32°	Counter Clockwise	57.0	By pass in effect.
11 July 1972	None	N/A	62.0	By pass in effect.
11 July 1972	Minus 5° to 27°	Clockwise	24.0	Plug valve too large, too difficult to adjust
12 July 1972	None	N/A	12.0	Too low. Stability index far into corrosive range.
13 July 1972	Plus 10° to Approx. 40°	Counter Clockwise	106.0	1 1/2 plug valve too insensitive.

ALASKA STDN STATION

NEW TREATMENT PLANT-ALASKA BUILDING

SOFTENER BY PASS

A 1 1/2 inch parallel copper line with a 1 1/2 inch plug valve was installed around the softener to control hardness in treated water

DATE	PLUG VALVE CHANGE	TURN DIRECTION	Ca as $CaCO_3$ ppm	COMMENTS
15 July 1972	None	N/A	44.0	Too low.
17 July 1972	None	N/A	52.0	Too low.
18 July 1972	None	N/A	76.0	Good range.
19 July 1972	Minimum Additional Opening.	Counter Clockwise	102.0	Good range.
22 July 1972	Open approx. 42°	N/A	120.0	Too high. Need smaller plug valve for better control.
4 August 1972	Approx. 42°	N/A	102.0	Changed from NaOH to Na_2CO_3 for pH and Alkal control.
21 August 1972	---	---	---	Removed 1 1/2 inch plug valve, installed one inch plug valve.

ALASKA STDN STATION | NEW TREATMENT PLANT-ALASKA BUILDING

SOFTENER BY PASS

A 1 1/2 inch parallel copper line with a 1 1/2 inch plug valve was installed around the softener to control hardness in treated water

DATE	PLUG VALVE CHANGE	TURN DIRECTION	Ca as $CaCO_3$ ppm	COMMENTS
21 August 1972	New Plug valve Approx. 70°	Clockwise	72.0	After this test opened valve minimum additional amount.
22 August 1972	Open Approx. 75°	Clockwise	82.0	O.K. S.I. = plus 0.5
25 August 1972	Approx. 75°	N/A	90.0	S.I. = plus 0.5

ALASKA STDN Station Chlorine Control for New Alaska Water Plant

DATE	Chemical pump Strokes per minute	Plunger Setting	Chlorine at Fe Filter Entry ppm	Chlorine at Softener Exit ppm	Chlorine in pressure tank ppm	Comments
10 July 1972	12	3	-	0.5	-	Estimate 48 hrs. to effect total response in pressure tank after chlorine feed change
10 July 1972	12	5	-	-	-	Change chemical mix to 3 pounds $Ca(ClO)_2$ per 50 gallons H_2O
11 July 1972	12	5	1.5	0.3	-	Tested at 08:00
11 July 1972	12	5	2.5	0.3	-	Tested at 09:30
12 July 1972	12	5	2.4	0.3	0.1	Tested at 10:00
13 July 1972	12	5	-	0.3	-	Tested at 13:00 then plunger set at 5 1/2.

ALASKA STDN Station Chlorine Control for New Alaska Water Plant

DATE	Chemical pump Strokes per minute	Plunger Setting	Chlorine at Fe Filter Entry ppm	Chlorine at Softener Exit ppm	Chlorine in pressure tank ppm	Comments
14 July 1972	12	5 1/2	3.0	0.4	0.1	Good
22 July 1972	12	5 1/2	3.0	0.4	0.1	Good
31 July 1972	12	5 1/2	3.0	0.4	0.1	Good
12 August 1972	12	5 1/2	4.0	1.4	0.3	Chlorine increase due to water flow change from 50 to 30 GPM with no change in chemical feed.
14 August 1972	12	5 1/2	3.0	1.6	0.6	
21 August 1972	12	5 1/2	3.0	1.5	0.5	

ALASKA STDN Station pH and Alkalinity Control for New Alaska Water Plant

DATE	Chemical Feed Pump strokes per minute	Plunger Setting	pH	Pheno Alkalinity ppm	Total Alkalinity ppm	Comments
13 July 1972	12	5	7.8	0.0	128.0	Major change in chemical concentration and feed rate.
14 July 1972	12	5	7.9	4.0	134.0	Stability index still in the minus zone.
15 July 1972	12	5	7.8	4.0	130.00	Stability index still in the minus zone.
18 July 1972	12	5 1/2	7.8	0.0	128.00	Increase pump stroke by one half division to inject more NaOH
24 July 1972	12	6	7.8	2.0	122.0	
28 July 1972	12	6 1/2	7.8	2.0	124.0	After tests: changed chemical feed to Na_2CO_3
4 August 1972	12	5 1/2	8.2	3.0	156.0	Stability index in the plus zone.
5 August 1972	12	5 1/2	8.3	8.0	146.0	Stability index in the plus zone.

ALASKA STDN Station pH and Alkalinity Control for New Alaska Water Plant

DATE	Chemical Feed Pump strokes per minute	Plunger Setting	pH	Pheno Alkalinity ppm	Total Alkalinity ppm	Comments
9 Augsut 1972	12	5 1/2	8.3	2.0	150.0	Stability index plus 0.3 Well pump output 50 GPM.
12 August 1972	12	5 1/2	8.4	8.0	150.0	Well pump flow restricted to 30 GPM.
14 August 1972	12	5 1/2	8.4	4.0	154.0	Chemical feeds must be lower to parallel lower GPM rate.
19 August 1972	12	5 1/2	8.5	4.0	154.0	pH a little high; chlorine high at 1.0
22 August 1972	12	5 1/2	8.5	2.0	150.0	S.I. = plus 0.5

ALASKA STDN Station Chemical Feeds for New Alaska Water Plant

Chemical Control	13 June 1972 As installed	10 July 1972 change	13 July 1972 change	14 July 1972 change	18 July 1972 change	4 August 1972 change
For chlorine Wallace & Tiernan Pump A747 12 strokes per minute	$Ca(ClO)_2$ Pump Plunger Index: 2 7 1/2 pounds per 50 gallons	$Ca(ClO)_2$ P.P.I. 5 3 pounds per 50 gallons	P.P.I. 5 1/2			
For Iron Wallace & Tiernan Pump A748 Duplex 12 strokes per minute	$KMnO_4$ Pump Plunger Index: 1 1 pound per 50 gallons			P.P.I. 5 1/2 15 ounces per 50 gallons		
For pH & Alkalinity W & T Pump A748 Duplex 12 strokes per minute	NaOH Pump Plunger Index: 1 23 pounds per 50 gallons	NaOH	NaOH P.P.I. 5 9 pounds per 50 gallons	NaOH	NaOH P.P.I. 5 1/2 24 pounds per 50 gallons	Na_2CO_3 P.P.I. 5 1/2

NOTES: 1. Each chemical tank holds 50 gallons. Chemical feed pumps run with well pump. Strokes per minute, pump plunger index and concentration of mix determines chemicals fed into the water.

2. On 4 August 1972 the chemical for pH and alkalinity control was changed.

ALASKA STDN Station Chemical Feeds for New Alaska Water Plant

Chemical Control	12 August 1972 Change	18 August 1972 Change				
For chlorine Wallace & Tiernan Pump A747 12 strokes per minute	$Ca(CIO)_2$ P.P.I. 5 1/2 30 ounces per 50 gallons	$Ca(CIO)_2$ P.P.I. 5 1/2 24 ounces per 50 gallons				
For Iron Wallace & Tiernan Pump A748 Duplex 12 strokes per minute	$KMnO_4$ P.P.I. 5 1/2 9 ounces per 50 gallons	$KMnO_4$ P.P.I. 5 1/2 9 ounces per 50 gallons				
For pH & Alkalinity W & T Pump A748 Duplex 12 strokes per minute	Na_2CO_3 P.P.I. 5 1/2 18 pounds per 50 gallons	Na_2CO_3 P.P.I. 5 1/2 15 pounds per 50 gallons				

NOTES: 1. On 12 August 1972 all concentrations were changed to compensate for CPM reduction in flow 50 to 30.

ALASKA STDN Station
New Treatment Plant

10 August 1972

Reduction of Water Quantity Flow into the New Alaska Treatment Plant.

I. The Problem

A. Empirical formula indicates flow through permutit Fe filter should be about 30 GPM. Manufacturer of tank advises 25 GPM.

B. Flow through Fe filter, as constructed, exceeded 55 GPM.

II. Requirements

A. Reduce flow into treatment plant to approximately 25 GPM.

B. Check electrical loads on pump motor as reduction is made.

III. The throttling process by Gate Valve

A. No restriction.

1. Position of throttling gate valve - wide open.

2. Flow into plant - 58 GPM.

3. Amperage check on 4 wires at control switch - 5 amps on each wire.

B. Gate valve with approximately 30% of stem length toward close position.

1. Some unknown restriction but of no effect on the pump flow into plant.

2. Flow into plant - 58 GPM.

3. Amperage on all 4 wires at control box - 5 amps each.

C. Gate valve with approximately 50% of stem length toward closed position.

1. See B 1. above.

2. Flow into plant - 58 GPM.

3. Amperage on all 4 wires at control box - 5 amps each.

D. Gate valve with approximately 75% of stem length toward closed position.

1. Restriction vibrates valve.

2. Flow into plant - 40 GPM.

3. Amperage on all 4 wires - a little under 5 amps each.

E. Gate valve approximately 85% of stem length toward closed position.

1. Heavy restriction noticeable at valve.

2. Flow into plant - zero GPM.

3. Amperage on all 4 wires - about 5 amps each.

F. Gate valve with approximately 80% of stem length toward closed position.

1. Restriction noticeable at valve because of vibration (light) and noise (light).

2. Flow into plant - 32 GPM.

3. Amperage on all 4 wires at control box - a little under 5 amps on each wire.

IV. Notes.

A. A two inch gate valve near the well head is the throttling device. It is okay for an interim period. The objective was to cut down the high flow through the Fe filter and that was achieved.

B. Five amps on all four wires is perplexing - should be clarified.

C. Less than five amp load on motor indicates the 26 GPM reduction of flow has a greater effect on the pump than the higher pressure due to the restriction.

D. Throttling valve wired and marked. 32 GPM delivery with high water in the well could mean 20 GPM with low water. This is a good flow range.

ALASKA STDN Station

August 1972

Water Treatment Plant Guidelines

DO:

1. Maintain complete test schedule.

2. Maintain good lab procedures. Ascertain test specimen is not contaminated. Make several good rinses of glassware with specimen water before taking the specimen. Each Friday wash glassware with soap and rinse repeatedly with distilled water to eliminate all soap residue.

3. If test result varies ten percent (10%) or more from previous test make a confirmation test.

4. Maintain automatic reorder schedule. Reorder chemical reagents each 4th month. Discard all four month old reagents.

5. Fill in test sheet with legible figures in pencil. Xerox each sheet each month. Mail zerox copies to J. Robinson, Code 822 each month. File station copy in proper folder and retain for five (5) years.

DON'T:

1. Overorder chemical reagents.

2. Permit reagent chemicals or treatment chemicals to run out.

3. Adjust test results. (Report tests exactly.)

4. Let a problem get out of hand. Contact J. Robinson or H. Gall for assistance.

5. Permit treated or well water to be used for lawn watering or equipment washing.

ALASKA STDN Station Potable Water Report   Plant Location ________ Month ________ Year ____

TEST DAY	Test Date	Total Hardness as $CaCO_3$ ppm	Ca as $CaCO_3$ ppm	Pheno Alkalinity ppm*	Total Alkalinity ppm	pH*	Temp °F	Fe ppm	Mn ppm	Chlorine ppm
1st Tuesday										
1st Friday										
2nd Tuesday										
2nd Friday										
3rd Tuesday										
3rd Friday										
4th Tuesday										
4th Friday										
5th Tuesday										
5th Friday										

* Time sensitive - run test within 30 seconds of drawing specimen.

CHEMICAL FEED CONCENTRATIONS	Pump setting
$Ca(ClO)_2$	
$MknO_4$	
Na_2CO_3	
NaOH	

COMMENTS: ________

ALASKA STDN STATION

WATER LABORATORY ITEMS

ITEMS	USE	COMPANY	CATALOGUE NUMBER	QUANTITY
Test Kit	Iron 9-5 ppm	Hach Chemical Co. Ames, Iowa	Model 18	1
Test Kit	Chlorine 0-3 ppm	Hach	Model CN-46/CN-46A	1
Test Kit	Manganese 0-3 ppm	Hach	Model MN-5	1
Test Kit	pH Cresol Red	Hach	Model 17G	1
Glassware	Measuring cylinder	Curtin Scientific	10 ml	2
Glassware	Measuring cylinder	Curtin	25 ml	2
Glassware	Measuring cylinder	Curtin	50ml	2
China Casserol	Titrations	Curtin	140cc	2
Burette Assembly	Measuring Titration Reagents	Curtin	Presto-Fil	3
5 Gallon Carbouy	Distilled water container	Curtin	Carbouy	1
Bulb Pump	Pressurize Carbouy	Curtin	Bulb pump	1
Plastic Funnel	Filtering	Curtin	3" Plastic Funnel	1
Stirring Rods	Mixing	Curtin	Plastic Stir Rod	2
Filter Papers	Filtering	Curtin	Filter Paper 11cm	Box - 100

NOTES:
1. Before test rinse sample container well with specimen.
2. Wash stains from test equipment with soap, rinse repeatedly with distilled water.
3. Retest to confirm any abnormal variation from previous test.
4. Keep lab items under dust cover when not in use.
5. Reorder lab items as breakage occurs.

ALASKA STDN STATION

WATER PLANT CHEMICAL REAGENTS

TEST	REAGENTS	SOURCE	CATALOGUE NUMBER	QUANTITY
1. Total Iron	FerroVer Powder Pillows	Hach Chemical Co. Ames, Iowa	927-99	100
2. Chlorine	O-Toliver Solution	Hach	141-14	4 ounces
3. Manganese	Citrate Buffer Powder Pillows	Hach	983-99	100
Manganese	Sodium Periodate Powder Pillows	Hach	984-99	100
4. pH	Cresol Red 6.5-8.5 range	Hach	256	8 ounces
5. Alkalinity	Sulfuric Acid N/50	Dearborn Chemical Chicago, Illinois	Code 555	1 qt.
Alkalinity	Phenolphthalein Indicator	Dearborn	Code 535	2 ounces
Alkalinity	Methyl Purple Indicator	Dearborn	Code 529	2 ounces
Alkalinity	Barium Chloride 10%	Dearborn	Code 503	1 qt.
6. Hardness	Hardness Reagent	Dearborn	Code 521	2 qts.
Hardness	Hardness Indicator	Dearborn	Code 519	Vial
Hardness	Hardness Buffer	Dearborn	Code 517	2 ounces
Hardness	Calcium Indicator	Dearborn	Code 509	Vial
Hardness	Calcium Buffer	Dearborn	Code 507	2 ounces

NOTES: 1. Set up automatic delivery of all stated quantities once every four months.
2. Upon arrival of new reagents, dispose of old.
3. Order fresh reagents, emphasize "fresh".

APPENDIX D. MINITRACK POTABLE WATER TESTS

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: MINITRACK (OLD PLANT)

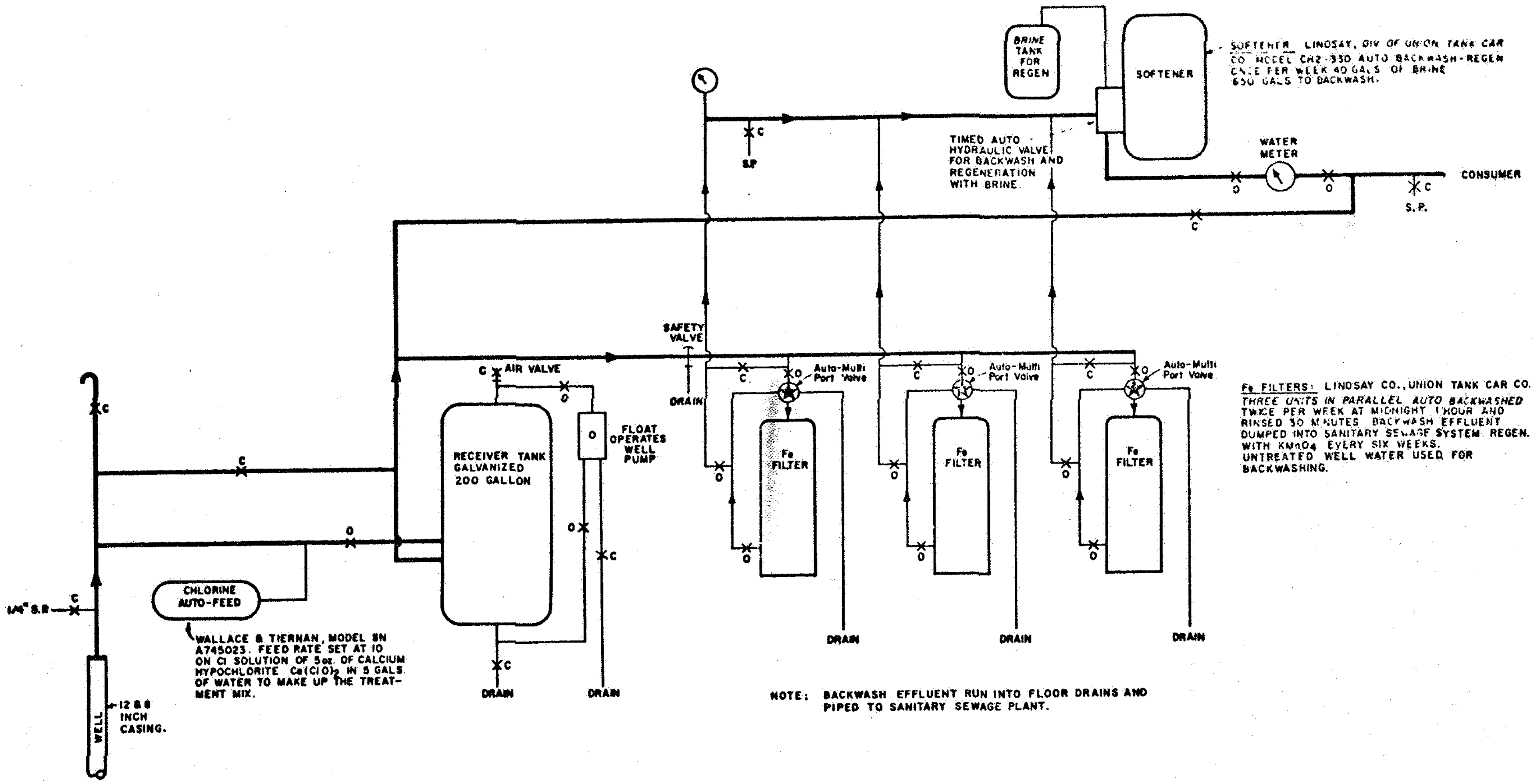
DATE: 1-11 JULY 72
BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TYPE OF TEST / SPECIMEN SOURCE		UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP – END OF DIST. SYSTEM	HOT WATER TAP – END OF DIST. SYSTEM		
HARDNESS AS $CaCO_3$	ppm	120.0	1	1	1	0.0	1		
CALCIUM AS $CaCO_3$	ppm	106.0	1	1	1	0.0	1		
CALCIUM AS Ca	ppm	42.0	1	1	1	0.0	1		
MAGNESIUM AS $CaCO_3$	ppm	14.0	1	1	1	0.0	1		
MAGNESIUM AS Mg	ppm	3.0	1	1	1	0.0	1		
pH - AVERAGE TEMP.		7.2-45	1	1	1	7.1-50	1		
PHENO ALAKAL AS $CaCO_3$	ppm	0.0	1	1	1	0.0	1		
METHYL ALAKAL AS $CaCO_3$	ppm	160.0	1	1	1	156.0	1		
HYDROX. ALAKAL AS $CaCO_3$	ppm	0.0	1	1	1	0.0	1		
BICARB. ALAKAL AS $CaCO_3$	ppm	0.0	1	1	1	0.0	1		
IRON	ppm	17.0	1	1	1	3.5	1		
MANGANESE	ppm	2.0	1	1	1	1.5	1		
CHLORIDES AS NaCL	ppm	4.0	1	1	1	2.0	1		
CHLORIDES AS Cl	ppm	2.0	1	1	1	1.2	1		
SULFATES	ppm	25.0	1	1	1	11.0	1		
SILICA	ppm	24.0	1	1	1	22.0	1		
COPPER	ppm	—	1	1	1	—	1		
ZINC	ppm	—	1	1	1	—	1		No test reagents
TDS	ppm	800.0	1	1	1	800.0	1		By Hydrometer
CHLORINE	ppm	0.0	1	1	1	0.0	1		
DISSOLVED O_2	M/gl.	0.2	1	1	1	0.8	1		
FREE CO_2 AS $CaCO_3$	ppm	60.0	1	1	1	30.0	1		High CO_2 level corrosive potential
FREE CO_2 AS CO_2	ppm	20.0	1	1	1	13.0	1		
H_2S	ppm	0.1	1	1	1	0.0	1		
STABILITY INDEX		minus 0.8	1	1	1	minus 2.5	1		Corrosive Indexes

WELL DATA:

DEPTH IN FEET	APPROX. 180	AVERAGE GALLONS/DAY USEAGE	EST: 750
CASING SIZE (INCHES)	12" & 8"	TEMPERATURE INCOMING WATER	48°F
DEPTH OF PUMP	160'	PUMP CAPACITY GPM	APPROX: 80
DEPTH OF WATER	EST: 20'	PUMP HEAD psi	APPROX: 90

1 No test deemed necessary because of scheduled dismantling and modifications.



PERFORATED CASING PROBABLY ACCOUNTS FOR HIGH Fe ppm BECAUSE OF GROUND WATER FLOODING THE WELL.

PACO PUMP
FD10-5P2
5 H.P. 3600 RPM
60 Hz 3 PHASE
208 VOLTS.

MINITRACK POTABLE WATER ANALYSES

TESTS	Untreated Well 1968-70	Untreated Well July 1972	After treatment 1968-70	After treatment July 1972	
Hardness as $CaCO_3$ ppm	140	0.0		0.0	
Ca as $CaCO_3$		106.0		0.0	
pH 45°F	7.2	7.1		7.1	
Pheno Alkal ppm		0.0		0.0	
Methyl Alkal ppm		160.0		156.0	
Hydroxide Alkal ppm		0.0		0.0	
Fe ppm	10.0	17.0		3.5	
Mn ppm		2.0		1.5	
Chlorides as Cl ppm	6.0	2.0		1.2	
Silica		24.0		22.0	
Sulfates		25.0		11.0	
TDS		800.0		800.0	HYDROMETER
Chlorine ppm		0.0		0.0	
Dissolved O_2 mg/l		0.2		0.8	
Free CO_2 as CO_2 ppm		26.0		13.0	INDISTINCT END POINT
H_2S ppm		0.01		0.0	
STABILITY INDEX		MINUS 0.8		MINUS 2.5	

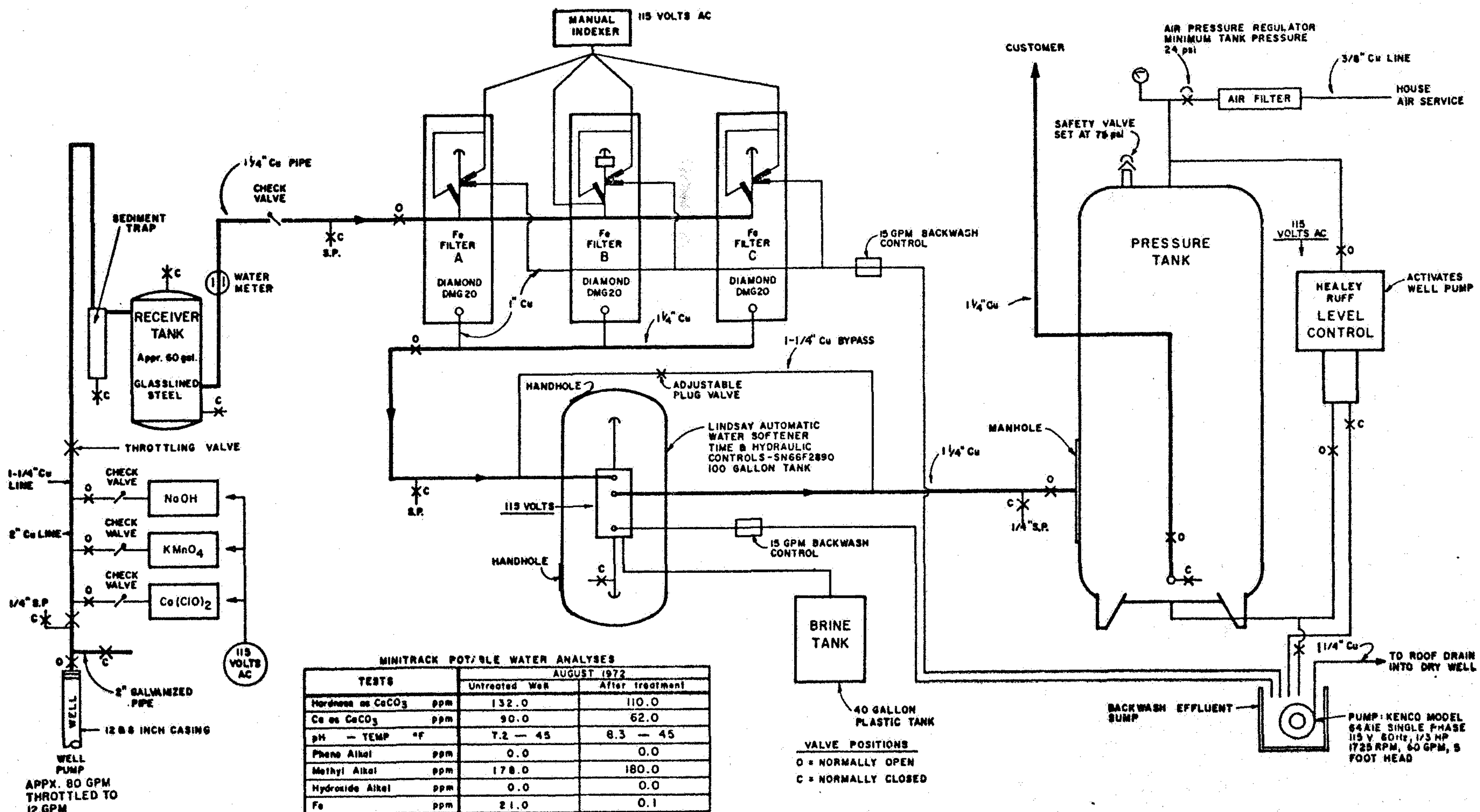
NOTE:
THE TREATMENT IMPARTED TO THE WELL WATERS MADE THE WATER MANY TIMES MORE CORROSIVE. THE IRON CONTENT IS EXTREMELY HIGH.

VALVE POSITIONS

O = NORMALLY OPEN
C = NORMALLY CLOSED

MINITRACK BLDG. POTABLE WATER TREATMENT PLANT – ALASKA (OLD PLANT)

DRAWN BY: WM ERKELENS	DATE: 24 JULY 1972	SIGNATURE
ANALYSES BY: H GALL, P.E.	DATE: 12 JULY 1972	SIGNATURE
APPROVED BY: J. ROBINSON, P.E.	DATE: 31 JULY 1972	SIGNATURE



MINITRACK POTABLE WATER ANALYSES

TESTS		AUGUST 1972 Untreated Well	AUGUST 1972 After treatment	
Hardness as $CaCO_3$	ppm	132.0	110.0	
Ca as $CaCO_3$	ppm	90.0	62.0	
pH — TEMP	°F	7.2 — 45	8.3 — 45	
Pheno Alkal	ppm	0.0	0.0	
Methyl Alkal	ppm	178.0	180.0	
Hydroxide Alkal	ppm	0.0	0.0	
Fe	ppm	21.0	0.1	
Mn	ppm	1.8	0.4	
Chlorides as Cl	ppm	2.0	8.5	
Silica	ppm	20.0	23.0	
Sulfates	ppm	13.0	5.0	
TDS	ppm	700.0	700.0	BY TDS METER
Chlorine	ppm	0.0	0.3	
Dissolved O_2	mg/l	0.0	1.2	
Free CO_2 as $CaCO_3$	ppm	56.0	30.0	INDISTINCT END POINT
H_2S	ppm	0 [illegible]	0.0	
STABILITY INDEX		MINUS 0.8	PLUS 0.3	

MINITRACK BLDG. POTABLE WATER TREATMENT PLANT - ALASKA

(NEW PLANT AUGUST 1972)

DRAWN BY: WM. ERKELENS	DATE: 5 AUGUST 1972	SIGNATURE: [signature]
DESIGNED BY: H GALL, P.E.	DATE: 19 AUGUST 1972	SIGNATURE: [signature]
APPROVED BY: J.H. ROBINSON, P.E.	DATE: 19 AUGUST 1972	SIGNATURE: [signature]

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: MINITRACK (NEW PLANT)

DATE: 31 AUG.–4 SEPT. '72
BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TYPE OF TEST / SPECIMEN SOURCE		UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP-END OF DIST. SYSTEM	HOT WATER TAP-END OF DIST. SYSTEM	AFTER SOFTENER AFTER REGEN. OF SOFTENER.	COMMENTS
HARDNESS AS $CaCO_3$	ppm	136.0	1	1	110.0	1	1		
CALCIUM AS $CaCO_3$	ppm	110.0			62.0				
CALCIUM AS Ca	ppm	44.0			25.0				
MAGNESIUM AS $CaCO_3$	ppm	26.0			48.0				
MAGNESIUM AS Mg	ppm	6.0			12.0				
pH – AVERAGE TEMP.	°F	7.1–44			8.3–45				
PHENO ALKAL AS $CaCO_3$	ppm	0.0			0.0				
METHYL ALKAL AS $CaCO_3$	ppm	170.0			180.0				
HYDROX. ALKAL AS $CaCO_3$	ppm	0.0			0.0				
BICARB. ALKAL AS $CaCO_3$	ppm	—			—				
IRON	ppm	18.0			0.1				
MANGANESE	ppm	0.8			0.4				
CHLORIDES AS NaCl	ppm	6.0			14.0				
CHLORIDES AS Cl	ppm	3.5			8.5				
SULFATES	ppm	18.0			5.0				SULFATES: VERY GOOD LEVEL FOR CORROSION CONTROL.
SILICA	ppm	24.0			23.0				
COPPER	ppm	5.0			0.35				NICE REMOVAL BY FILTERS Cu IMPARTS BAD TASTE.
ZINC	ppm	—			—				NO TEST REAGENTS
TDS	ppm	700			700				BY HYDROMETER
CHLORINE	ppm	0.0			0.3				
DISSOLVED O_2	mg/l.	0.0			1.2				SOME O_2 PICKED UP IN TREATMENT PLANT.
FREE CO_2 AS $CaCO_3$	ppm	44.0			30.0				
FREE CO_2 AS CO_2	ppm	19.0			13.0				
H_2S	ppm	0.1			0.0				
STABILITY INDEX		MINUS 0.8	1	1	PLUS 0.3	1	1		

WELL DATA:

DEPTH IN FEET	APPX. 180	AVERAGE GALLONS/DAY USEAGE	1200
CASING SIZE (INCHES)	12" & 8"	TEMPERATURE INCOMING WATER	44°F.
DEPTH OF PUMP	160'	PUMP CAPACITY GPM	80 3
DEPTH OF WATER	EST. 20'	PUMP HEAD psi	APPX. 90

1 TIME NOT AVAILABLE FOR THESE TESTS.
2 ABOUT 80% OF WATER IS BY-PASSED AROUND SOFTENER TO RAISE THE STABILITY INDEX.
3 RESTRICTED TO 12 GPM THROUGH TREATMENT PLANT.

BALANCING TESTS ON THE NEW TREATMENT PLANT

MINITRACK BUILDING, ALASKA STDN STATION

ANALYST: H. GALL, P.E.
AUGUST, SEPT. 1972

DATE	pH Temp.	PHENO ALKALINITY ppm	TOTAL ALKALINITY ppm	CaCO HARDNESS ppm	Ca as CaCO ppm	Fe ppm	Mn ppm	Chlorine ppm	GALLONS USED TO DATE	COMMENTS
31 AUG. 72	7.6 - 48	0.0	242.0	20.0	12.0	0.1	0.1	0.0	3229	STABILITY INDEX • MINUS 0.9
1 SEPT. 72	7.6 - 48	0.0	260.0	20.0	10.0	0.3	0.3	0.0	4644	S.I. • MINUS 0.9, AFTER TESTS CHANGED CHEMISTRY
3 SEPT. 72	7.5 - 48	0.0	190.0	110.0	62.0	0.2	0.4	0.0	6970	S.I. • MINUS 0.5, SOFTENER BY-PASS FULL OPEN
4 SEPT. 72	7.6 - 49	0.0	180.0	120.0	90.0	0.1	0.4	0.0	7958	S.I. • MINUS 0.3, AFTER TESTS CHANGED CHEMISTRY
6 SEPT. 72	7.9 - 48	0.0	182.0	112.0	68.0	0.3	0.4	0.2	9129	S.I. • 0.0

MINITRACK PLANT

Tests on specimens from pressure tank.

BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TEST	LIMITS	
	MINIMUM	MAXIMUM
1. CHLORINE	0.2 ppm	0.5 ppm
2. IRON	0.0 ppm	0.3 ppm
3. MANGANESE	0.0 ppm	1.0 ppm
4. CALCIUM HRDNS	60.0 ppm	100.0 ppm
5. PHENO ALK.	0.0 ppm	25.0 ppm
6. TOTAL ALK.	150.0 ppm	180.0 ppm
7. pH	7.8	8.4

item	control by:
1	$Ca(ClO)_2$ PUMP STROKE
2 & 3	IRON FILTER & $KMnO_4$ PUMP STROKE
4	SOFTENER & BY-PASS
5, 6 & 7	NaOH PUMP STROKE

MINITRACK PLANT

CHEMICAL FEED & CONCENTRATIONS

CHEMICAL	PUMP STROKE	AVERAGE INJECTION INDEX	CONCENTRATION
$Ca(ClO)_2$	20 PER MINUTE	6	30 OUNCES PER 15 GAL. TANK
$KMnO_4$	6 PER MINUTE	6	12 OUNCES PER 15 GAL. TANK
NaOH	20 PER MINUTE	6	12 POUNDS PER 15 GAL. TANK

MINITRACK PLANT
BACKWASH CYCLES

UNIT	FREQUENCY	BACKWASH PERIOD	REGENERATE	
Fe FILTER	EVERY DAY OR ... APPRX. 800 GALS.	15 MINUTES	N / A	REWASH 0 MINUTES
SOFTENER	ONCE PER MONTH BY FIRE TRUCK WITH BY PASS IN EFFECT	FULL FIRE TRUCK TANK	BRINE 20 MINUTES	RINSE 10 MINUTES

APPENDIX E. GILMORE POTABLE WATER TESTS

ALASKA STATION
POTABLE WATER TESTS

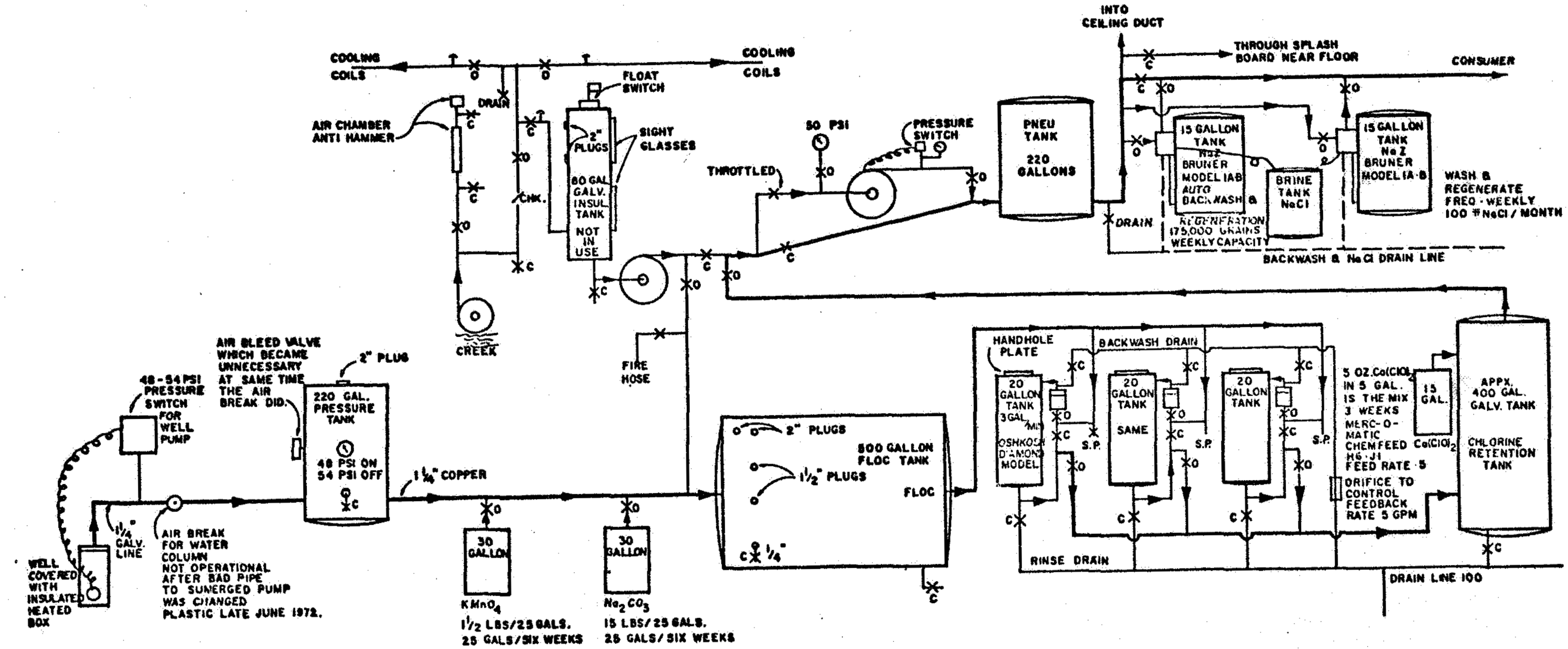
SOURCE OF WATER: GILMORE (OLD PLANT)

DATE: 14-15 JULY '72
BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

SPECIMEN SOURCE / TYPE OF TEST		UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP-END OF DIST. SYSTEM	HOT WATER TAP-END OF DIST. SYSTEM		COMMENTS
HARDNESS AS $CaCO_3$	ppm	104.0	104.0	—	—	82.0	82.0		
CALCIUM AS $CaCO_3$	ppm	62.0	62.0	—	—	52.0	48.0		
CALCIUM AS Ca	ppm	24.0	24.0	—	—	33.0	19.0		
MAGNESIUM AS $CaCO_3$	ppm	42.0	42.0	—	—	30.0	34.0		
MAGNESIUM AS Mg	ppm	—	—	—	—	—	—		
pH — AVERAGE TEMP.	°F	6.0-44	6.9-46	—	—	6.5-50	6.5-100		ESTIMATES BETWEEN 6.0 & 7.0 BY COLOR TUBES
PHENO ALKAL AS $CaCO_3$	ppm	0.0	0.0	—	—	0.0	0.0		
METHYL ALKAL AS $CaCO_3$	ppm	60.0	104.0	—	—	102.0	98.0		
HYDROX. ALKAL AS $CaCO_3$	ppm	0.0	0.0	—	—	0.0	0.0		
BICARB. ALKAL AS $CaCO_3$	ppm	60.0	104.0	—	—	102.0	98.0		
IRON	ppm	2.3	3.5	—	—	1.0	1.7		
MANGANESE	ppm	0.1	0.05	—	—	1.0	1.0		BELOW 1.0 ppm TEST IS INACCURATE. USE TETRA PHENYLORSONIUM CE METHOD.
CHLORIDES AS NaCl	ppm	2.0	2.0	—	—	4.0	6.0		
CHLORIDES AS Cl	ppm	1.2	1.2	—	—	2.0	4.0		
SULFATES	ppm	47.0	60.0	—	—	40.0	44.0		
SILICA	ppm	14.5	15.0	—	—	14.5	14.5		GOOD SILICATE LEVEL
COPPER	ppm	0.7	0.4	—	—	0.22	0.24		
ZINC	ppm	—	—	—	—	—	—		NO REAGENTS AVAILABLE FOR ZINC TESTS
TDS	ppm	800	900	—	—	800	800		HYDROMETER METHOD POOR BELOW 2000 ppm.
CHLORINE	ppm	0.0	0.4	—	—	1.2	0.0		
DISSOLVED O_2	mg/l	0.2	4.4	—	—	0.8	0.4		
FREE CO_2 AS $CaCO_3$	ppm	64.0	30.0	—	—	32.0	50.0		VERY HIGH CO_2 AS $CaCO_3$ AND AS CO_2. QUITE CORROSIVE
FREE CO_2 AS CO_2	ppm	28.0	13.0	—	—	14.0	22.0		CO_2 IS THE BIG PROBLEM WITH THIS WELL.
H_2S	ppm	1.0	0.0	—	—	0.0	0.0		
STABILITY INDEX		MINUS 2.6	MINUS 2.3	—	—	MINUS 2.4	MINUS 2.0		

WELL DATA:

DEPTH IN FEET	95	AVERAGE GALLONS/DAY USEAGE	400
CASING SIZE (INCHES)	6	TEMPERATURE INCOMING WATER	45°F
DEPTH OF PUMP	90	PUMP CAPACITY GPM	8
DEPTH OF WATER	20	PUMP HEAD psi	80



GILMORE POTABLE WATER ANALYSIS

TESTS		AUGUST 1972 Untreated Well	After treatment
Hardness as $CaCO_3$	ppm	104.0	82.0
Ca as $CaCO_3$	ppm	62.0	33.0
pH — TEMP. °F		6.0 — 44	6.5 — 50
Pheno Alkal	ppm	0.0	0.0
Methyl Alkal	ppm	60.0	102.0
Hydroxide Alkal	ppm	0.0	0.0
Fe	ppm	2.3	1.0
Mn	ppm	0.1	1.0
Chlorides as Cl	ppm	1.2	2.0
Silica	ppm	14.5	14.5
Sulfates	ppm	47.0	400
TDS	ppm	800.0	800.0
Chlorine	ppm	0.0	1.2
Dissolved O_2	mg/l	0.2	0.8
Free CO_2 as CO_2	ppm	28.0	14.0
H_2S	ppm	1.0	0.0
STABILITY INDEX		MINUS 2.6	MINUS 1.7

NOTE:
THE WELL WATER AND TREATED WATER WERE BOTH EXTREMELY CORROSIVE.

NESS/CDA BLDG. POTABLE WATER TREATMENT PLANT-ALASKA
(OLD PLANT)

DRAWN BY: G.M. ANDERSON	DATE: 21 AUG. 1972	SIGNATURE: [signature]
ANALYSIS: H. GALL, P.E.	DATE: 24 AUG. 1972	SIGNATURE: [signature]
APPROVED BY: J.H. ROBINSON, P.E.	DATE: 24 AUG. 1972	SIGNATURE: [signature]

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: NESS/CDA (NEW PLANT) — DATE: AUG./SEPT.'72

BY: H. GALL, P.E.

NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TYPE OF TEST \ SPECIMEN SOURCE	UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP-END OF DIST. SYSTEM	HOT WATER TAP-END OF DIST. SYSTEM	AFTER SOFTENER AFTER REGEN. OF SOFTENER.	COMMENTS
HARDNESS AS $CaCO_3$ ppm	94.0	1	60.0	1	55.0	1		SOFTENERS BY-PASSED COMPLETELY TO KEEP Ca HARDNESS UP
CALCIUM AS $CaCO_3$ ppm	56.0		32.0		30.0			
CALCIUM AS Ca ppm	22.0		19.0		18.0			
MAGNESIUM AS $CaCO_3$ ppm	38.0		28.0		27.0			
MAGNESIUM AS Mg ppm	10.0		7.0		7.0			
pH — AVERAGE TEMP. °F	6.6-45		8.7-50		8.5-55			
PHENO ALKAL AS $CaCO_3$ ppm	0.0		24.0		15.0			
METHYL ALKAL AS $CaCO_3$ ppm	60.0		220.0		190.0			
HYDROX. ALKAL AS $CaCO_3$ ppm	0.0		—		—			
BICARB. ALKAL AS $CaCO_3$ ppm	—		—		—			
IRON ppm	3.5		0.3		0.3			
MANGANESE ppm	0.2		0.2		0.2			
CHLORIDES AS NaCl ppm	3.0		4.0		—			
CHLORIDES AS Cl ppm	1.8		2.4		—			
SULFATES ppm	38.0		30.0		—			
SILICA ppm	13.5		16.0		—			
COPPER ppm	0.8		0.3		—			
ZINC ppm	—		—		—			NO REAGENTS
TDS ppm	900		900		1200			TEST BY HYDROMETER
CHLORINE ppm	0.0		—		0.3			
DISSOLVED O_2 mg/l.	0.0		2.4		—			O_2 PICKED UP IN HOLDING AND PRESSURE TANKS
FREE CO_2 AS $CaCO_3$ ppm	74.0		0.0		—			COMPLETE CONTROL OF CO_2
FREE CO_2 AS CO_2 ppm	33.0		0.0		—			0.0 IS EXCELLENT
H_2S ppm	1.1		0.0		—			0.0 IS EXCELLENT
STABILITY INDEX	MINUS 1.9	1	PLUS 0.5	1	PLUS 0.2	1		

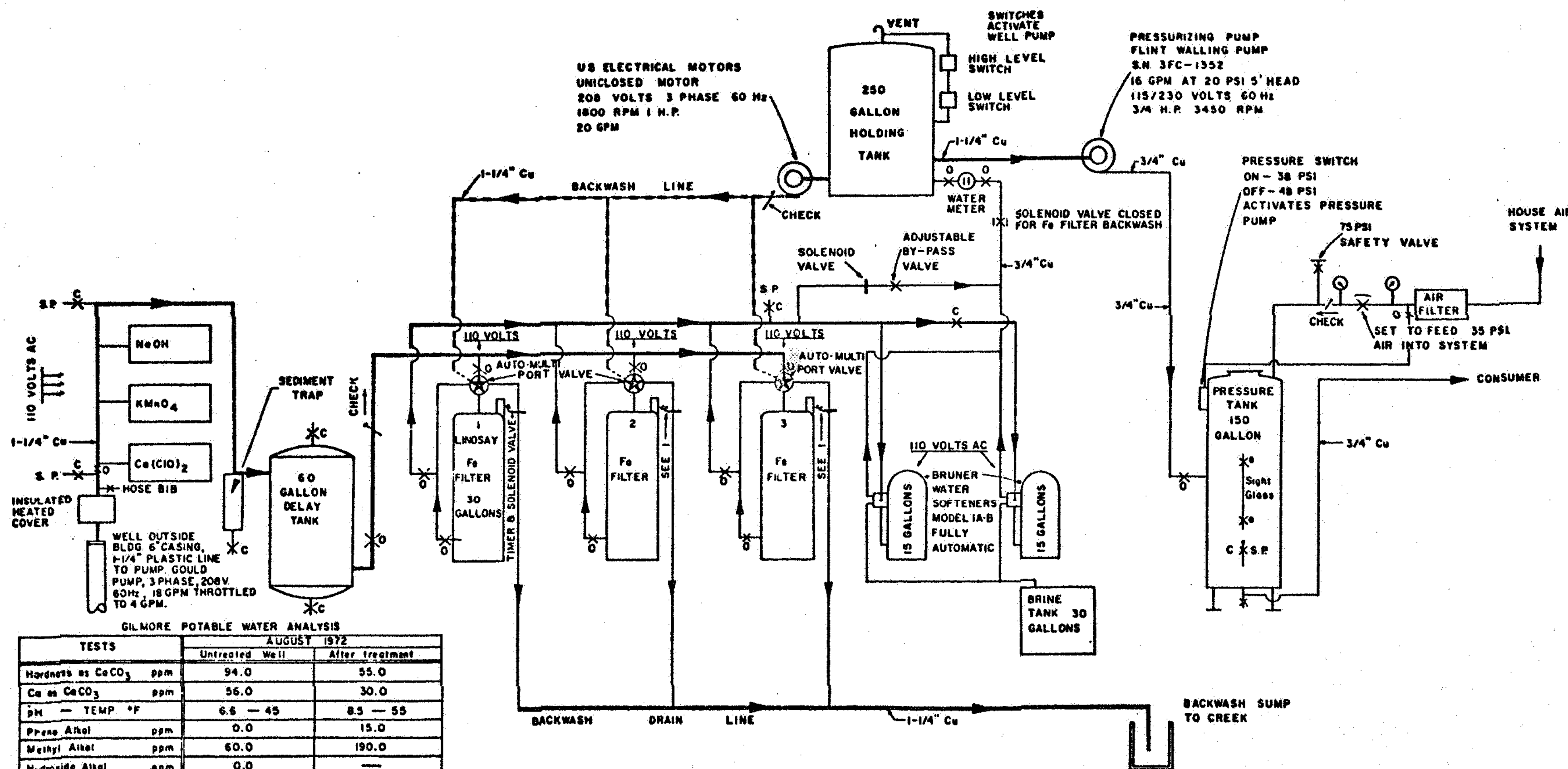
WELL DATA:

DEPTH IN FEET	95	AVERAGE GALLONS/DAY USEAGE	400
CASING SIZE (INCHES)	6	TEMPERATURE INCOMING WATER	45°F
DEPTH OF PUMP	90	PUMP CAPACITY GPM	18
DEPTH OF WATER	20	PUMP HEAD psi	80

1 UNNECESSARY TESTS AT THIS TIME.

2 SOFTENERS BY-PASSED 100%.

3 THROTTLED TO 5 GPM



GILMORE POTABLE WATER ANALYSIS

TESTS		AUGUST 1972 Untreated Well	After treatment
Hardness as $CaCO_3$	ppm	94.0	55.0
Ca as $CaCO_3$	ppm	56.0	30.0
pH — TEMP °F		6.6 — 45	8.5 — 55
Pheno Alkal	ppm	0.0	15.0
Methyl Alkal	ppm	60.0	190.0
Hydroxide Alkal	ppm	0.0	—
Fe	ppm	3.5	0.3
Mn	ppm	0.2	0.2
Chlorides as Cl	ppm	1.8	—
Silica	ppm	13.5	—
Sulfates	ppm	38.0	—
TDS	ppm	900	1200
Chlorine	ppm	0.0	0.3
Dissolved O_2	mg/l	0.0	—
Free CO_2	ppm	33.0	—
H_2S	ppm	1.1	—
STABILITY INDEX		MINUS 1.9	PLUS 0.2

NESS/CDA BLDG. POTABLE WATER TREATMENT PLANT-ALASKA
(NEW PLANT)

DRAWN BY: WM ERKELENS	DATE 26 JULY 1972	SIGNATURE
DESIGNED BY: H. GALL, P.E.	DATE 20 JULY 1972	SIGNATURE
APPROVED BY: J.H. ROBINSON, P.E.	DATE 21 AUGUST 1972	SIGNATURE

BALANCING TESTS ON THE NEW TREATMENT PLANT

NESS/CDA BUILDING, ALASKA STDN STATION

ANALYST: H. GALL, P.E.
AUGUST, SEPT. 1972

DATE	pH Temp.	PHENO ALKALINITY ppm	TOTAL ALKALINITY ppm	CaCO HARDNESS ppm	Ca as CaCO ppm	Fe ppm	Mn ppm	Chlorine ppm	GALLONS USED TO DATE	COMMENTS
23 AUG. '72	6.5 – 55	0.0	70.0	38.0	34.0	—	—	3.0 +	3947	STABILITY INDEX AT MINUS 3.5
24 AUG. '72	6.5 – 55	0.0	110.0	2.0	0.0	0.4	0.8	3.0+	4630	S.I. = MINUS 3.3, AFTER TESTS SOFTENER BY PASSED COMPLETELY
25 AUG. '72	6.8 – 55	0.0	98.0	60.0	38.0	0.7	0.7	1.0	5212	S.I. = MINUS 1.7
28 AUG. '72	6.7 – 56	0.0	84.0	104.0	70.0	1.4	0.6	0.0	6110	S.I. = MINUS 1.7
29 AUG. '72	6.8 – 55	0.0	100.0	96.0	74.0	1.2	0.7	0.1	6352	S.I. = MINUS 1.5
30 AUG. '72	8.5 – 56	18.0	198.0	60.0	44.0	1.3	0.1	0.9	7557	S.I. = PLUS 0.3
31 AUG. '72	8.0 – 56	8.0	200.0	62.0	48.0	1.2	0.5	1.0	7775	S.I. = PLUS 0.2
3 SEPT. '72	9.0 – 58	34.0	240.0	54.0	36.0	1.3	0.6	0.2	9501	S.I. = PLUS 0.9
4 SEPT. '72	9.0 – 60	50.0	226.0	60.0	32.0	1.2	0.7	0.3	9603	S.I. = PLUS 1.0 : No. 1 FILTER MALFUNCTIONS
5 SEPT '72	8.7 – 50	24.0	220.0	50.0	26.0	0.1	0.3	0.3	10256	S.I. = PLUS 0.5 : Fe FILTER CORRECTED

NESS/CDA PLANT

Tests on specimens from pressure tank.

BY: H. GALL, P.E.
NASA FACILITY ENGINEER: J. ROBINSON, P.E.

TEST	LIMITS	
	MINIMUM	MAXIMUM
1. CHLORINE	0.1 ppm	0.5 ppm
2. IRON	0.0 ppm	0.3 ppm
3. MANGANESE	0.0 ppm	0.3 ppm
4. CALCIUM HRDNS	40.0 ppm	80.0 ppm
5. PHENO ALK.	0.0 ppm	20.0 ppm
6. TOTAL ALK.	80.0 ppm	180.0 ppm
7. pH	8.2	8.7

item	control by:
1	$Ca(ClO)_2$ PUMP STROKE
2 & 3	IRON FILTER & $KMnO_4$ PUMP STROKE
4	SOFTENER & BY-PASS
5, 6 & 7	Na_2CO_3 PUMP STROKE

NESS/CDA PLANT

CHEMICAL FEED & CONCENTRATIONS

CHEMICAL	PUMP STROKE	AVERAGE INJECTION INDEX	CONCENTRATION
$Ca(ClO)_2$	20 PER MINUTE	6	15 OUNCES PER 15 GAL. TANK
$KMnO_4$	20 PER MINUTE	$4\frac{1}{2}$	4 OUNCES PER GAL. TANK
Na_2CO_3	20 PER MINUTE	3	12 POUNDS PER 15 GAL. TANK

NESS/CDA PLANT
BACKWASH CYCLES

UNIT	FREQUENCY	BACKWASH PERIOD	REGENERATE	
Fe FILTER	No.1 NIGHTLY No.2 ALTERNATE NIGHTS No.3 EVERY 3rd. NIGHT	25 MIN.	N/A	
SOFTENER	NONE	N/A	N/A	BY-PASSED 100%

APPENDIX F. R&RR POTABLE WATER TESTS

ALASKA STATION
POTABLE WATER TESTS

SOURCE OF WATER: R & RR **DATE: 5-8 AUG. 72**

BY: H. GALL, P. E.

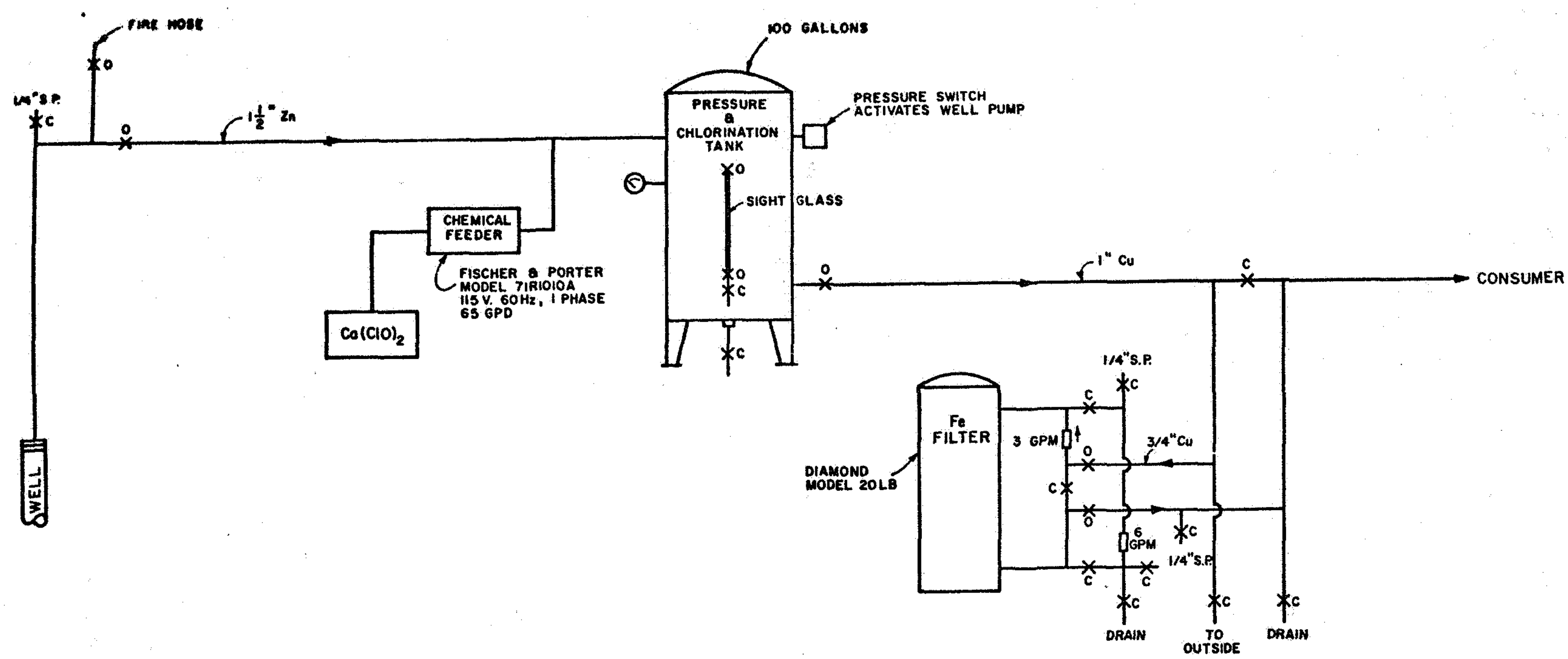
NASA FACILITY ENGINEER: J. ROBINSON, P. E.

TYPE OF TEST \ SPECIMEN SOURCE	UNTREATED WELL WATER	BEFORE IRON FILTERS	AFTER IRON FILTERS	AFTER SOFTENERS	COLD WATER TAP – END OF DIST. SYSTEM	HOT WATER TAP – END OF DIST. SYSTEM		
HARDNESS AS $CaCO_3$ ppm	292.0	1	250	2	280.0	256.0		
CALCIUM AS $CaCO_3$ ppm	156.0	1	160	2	150.0	158.0		
CALCIUM AS Ca ppm	64.0	1	64.0	2	60.0	63.0		
MAGNESIUM AS $CaCO_3$ ppm	132.0	1	90.0	2	130.0	98.0		
MAGNESIUM AS Mg ppm	33.0	1	22.0	2	32.0	24.0		
pH - AVERAGE TEMP. °F	6.3-48	1	6.5-55	2	6.5-55	6.6-85		
PHENO ALAKAL AS $CaCO_3$	0.0	1	0.0	2	0.0	0.0		
METHYL ALAKAL AS $CaCO_3$ ppm	188.0	1	182.0	2	186.0	190.0		
HYDROX. ALAKAL AS $CaCO_3$ ppm	—	1	—	2	—	—		
BICARB. ALAKAL AS $CaCO_3$ ppm	—	1	—	2	—	—		
IRON ppm	5.5	1	4.3	2	4.3	4.3		Dilute: 10cc specimen 15cc distilled water
MANGANESE ppm	0.5	1	0.75	2	1.5			
CHLORIDES AS NaCL ppm	46.0	1	60.0	2	42.0	40.0		
CHLORIDES AS Cl ppm	28.0	1	36.0	2	25.0	24.0		
SULFATES ppm	34.0	1	38.0	2	46.0	48.0		
SILICA ppm	33.0	1	35.0	2	38.0	25.0		Dilute: 1cc specimen 24cc distilled Water
COPPER ppm	2.5	1	1.6	2	1.7	0.6		Good silica level
ZINC ppm	—	1	—	2	—	—		No test reagents
TDS ppm	1200	1	1400	2	1500	1000		By Hydrometer
CHLORINE ppm	0.0	1	0.0	2	0.0	0.0		
DISSOLVED O_2 M/gl.	2.0	1	0.0	2	0.0	0.0		Hi level of entrained gas escapes water within 1minute after exposure.
FREE CO_2 AS $CaCO_3$ ppm	78.0	1	120.0	2	126.0	114.0		Very high and undesirable.
FREE CO_2 AS CO_2 ppm	34.0	1	53.0	2	55.0	50.0		Very high and undesirable
H_2S ppm	0.0	1	0.0	2	0.0	0.0		Good
STABILITY INDEX	minus 1.8	1	minus 1.4	2	minus 1.1	minus 0.9		Tends to corrode
	pHs=8.1		pHs=7.9		pHs=7.6	pHs=7.5		

WELL DATA:

DEPTH IN FEET	APPROX. 160	AVERAGE GALLONS / DAY USEAGE	EST: 100
CASING SIZE (INCHES)	6	TEMPERATURE INCOMING WATER	48°F
DEPTH OF PUMP	APPROX. 155'	PUMP CAPACITY GPM	EST: 25
DEPTH OF WATER	APPROX. 120'	PUMP HEAD psi	EST: 75psi

1 NO SAMPLING POINTS
2 NO SOFTENER



GRARR POTABLE WATER ANALYSIS

TESTS		AUGUST 1972	
		Untreated Well	After treatment
Hardness as $CaCO_3$	ppm	292.0	280.0
Ca as $CaCO_3$	ppm	156.0	150.0
pH — TEMP. °F		6.3 — 48	6.5 — 55
Pheno Alkal	ppm	0.0	0.0
Methyl Alkal	ppm	188.0	186.0
Hydroxide Alkal	ppm	—	—
Fe	ppm	5.5	4.3
Mn	ppm	0.5	1.5
Chlorides as Cl	ppm	28.0	25.0
Silica	ppm	33.0	38.0
Sulfates	ppm	34.0	46.0
TDS	ppm	1200.0	1500.0
Chlorine	ppm	0.0	0.0
Dissolved O_2	mg./l.	2.0	0.0
Free CO_2 as CO_2	ppm	34.0	55.0
H_2S	ppm	0.0	0.0
STABILITY INDEX		MINUS 1.8	MINUS 1.1

NOTE:

THE UNTREATED AND TREATED WATERS PROVE CONCLUSIVELY THE TREATMENT PLANT IS ALMOST TOTALLY INEFFECTIVE.

VALVE POSITIONS

O = NORMALLY OPEN
C = NORMALLY CLOSED

GRARR BUILDING — POTABLE WATER TREATMENT PLANT — ALASKA

AUGUST 1972 CONFIGURATION

DRAWN BY: WM. ERKELENS	DATE: 25 AUG. 1972	SIGNATURE:
ANALYSIS BY: H. GALL, P.E.	DATE: 28 AUG. 1972	SIGNATURE:
APPROVED BY: J.H. ROBINSON, P.E.	DATE: 28 AUG. 1972	SIGNATURE:

APPENDIX G. DAILY REPORTS

6SEP72 [illegible] 1Z

ULA069B
RR GCEN GSTS
DE GULA 069B
06/2300Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NCO

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER WEDNESDAY 6 SEPTEMBER 1972
NEW WATER TREATMENT PLANTS AT ALASKA BUILDING MINITRACK AND
GILMORE NOW ALL PRODUCING GOOD POTABLE AND STABLE WATER WITH
CONTROLLED CORROSION AND SCALING TENDENCIES.
STATION ANALYST CHECKED OUT ON ALL PROCEDURES. OPERATING
GUIDE LINES POSTED IN EACH PLANT. ALL ITEMS TO MAINTAIN PRESENT
WATER QUALITY ARE ON THE STATION.
DIESEL CLEANING: NO 1 CAT DIESEL COOLANT CIRCUITS NOW PROTECTED
WITH BORATE NITRITE.
NOTES: DRAFT OF TOTAL REPORT IS COMPLETE. BRIEFED STADIR
AND STAFF ON THE ALASKA TREATMENT PLANTS.
WILL DEPART ALASKA STATION 7 SEPTEMBER 1972.

06/2312Z SEP 72 GULA

6 SEP 72 [illegible] 2Z

ULA 07FB
RR GCEN GSTS
DE GULA 0723
06/2327Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

M. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
TUESDAY: 5 SEPTEMBER 1972
NEW GILMORE PLANT: COMPLETED BALANCING TESTS. STABILITY INDEX
AT PLUS 0.5. CORRECTED MALFUNCTION IN FE FILTER.
HYDRAULIC DIFFERENTIAL VALVE WAS JAMMED IN OPEN POSITION.
TURNED PLANT OVER TO STATION PERSONNEL.
NOTES: DRAFTING WORK 95 PER CENT COMPLETE.
SOME TYPING TO BE DONE. COMPLETED PACKING THE PORTABLE LABORATORY.
FLUSHED NUMBER ONE DIESEL COOLANT CIRCUITS. RADIATOR CIRCUIT
IN EXCELLENT CONDITION. JACKET CIRCUIT ABOUT 80 PER CENT CLEAN.
WILL CHARGE CIRCUITS WITH PERMANENT MIXTURE TOMORROW. BRIEFED
THE STATION DIRECTOR.

06/2327Z SEP 72 GULA

5SEP72 21 12z

ULA030A
RR GCEN GSTS
DE GULA 030A
05/2026Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
MONDAY: 4 SEPTEMBER 1972
NEW PLANT MINITRACK: CONTINUED BALANCING TEST SERIES. MADE FINAL CORRECTIONS IN CHEMICAL FEEDS.
NEW PLANT GILMORE: CONTINUED BALANCING TEST SERIES. RAN TOTAL TEST SERIES ON EACH IRON FILTER. ONE FE FLITER MALFUNCTIONING. CORRECTION IS A PLUMBING JOB ON AUTOMATIC BACKWASHING VALVE.
NOTES: EQUIPPED STATION ANALYST WITH ALL THE REAGENTS, GLASSWARE AND TEST KITS NEEDED FOR HIS WORK. STARTED TO PACK PORTABLE LABORATORY. REPORT OF TOTAL EXERCISE 80 PER CENT COMPLETE.

05/2107Z SEP 72 GULA

5 SEP 72 20 5 SEP 72 20 23Z

ULA042B
RR GCEN GSTS
DE GULA 042B
05/2003Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SUMMARY FOR WEEK BENINNING 28 AUGUXT 1972.
HOURS WORKED: 28 AUG - 10, 29 AUG - 13, 30 AUG - 13, 31 AUG - 10,
SEPT 1 - 14, SEP 2 - 17 AND SEPT 3 - 8. OVERTIME WORKED: 33 HOURS.
SUMMARY OF WORK:
NEW PLANT MINITRACK:
CORRECTED OPERATIONAL PROBLEMS AND LEAKS. SET AND ADJUSTED
CHEMICAL FEEDS. STARTED SERIES OF BALANCING TESTS.
NEW PLANT GILMORE:
CORRECTED OPERATIONAL AND EQUIPMENT PROBLEMS. CONTINUED
BALANCING TESTS.
NOTE: ALKALINE CLEANED THE TWO COOLING SYSTEMS ON THE NUMBER ONE
CAT DIESEL.

05/2021Z SEP 72 GULA

5 SEP 72 20 40Z

ULA043B
RR GCEN GSTS
DE GULA 043B
05/2013Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H.PGALL SENDS:
SUBJECT; ALASKA POTABLE WATER
SUNDAY: 3 SEPTEMBER 1972
NEW PLANT MINITRACK: COMPLETED CHEMICAL CONFIRMATION TESTS ON WELL WATER. BALANCING TEST SERIES ON TREATED WATER RAN. CHANGED FEED RATES ON CA(CLO)2, KMNO4 AND NAOH TO RAISE PH AND CHLORINE.
NEW PLANT GILMORE:
BALANCING TEST SERIES ON TREATED WATER RAN. CHEMICAL FEED RATES CHANGED ON CA(CLO)2, KMNO4 AND NA2CO3. TESTS POINT TO A MALFUNCTIONING IRON FILTER. TOO MUCH IRON APPEARING IN TREATED WATER.

05/2033Z SEP 72 GULA

5 SEP 72 20 04Z

ULA040B
RR GCEN GSTS
DE GULA 040B
05/1953Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SATURDAY: 2 SEPTEMBER 1972
NEW PLANT GILMORE: INSTALLED SOLENOID VALVE UPSTREAM FROM HOLDING TANK TO CLOSE DURING ANY BACKWASHING. CHEMICAL TESTS SHOWING TOO MUCH IRON IN IN WATER DOWNSTREAM FROM FE FILTERS.
NEW PLANT MINITRACK:
THREE QUARTER INCH PLUG VALVE AND LINE ACTING AS SOFTENER BY PASS REPLACED BY ONE AND ONE QUARTER INCH ELEMENTS. CHANGED FROM NA2CO3 TO NAOH FOR PH AND ALKALINITY CONTROL.
NOTES: NUMBER ONE CAT DIESEL COOLANT CIRCUITS ALKALINE CLEANED TODAY. CLEANING EFFLUENT AND EFFLUENTS OF TWO RINSES WERE EXTREMELY DIRTY. AFTER 16 HOURS PUT WATER WITH 1200 PPM BORATE NITRITE IN BOTH CIRCUITS, AS INTERIM MEASURE UNTIL TUESDAY. LONG DAY.

05/1959Z SEP 72 GULA

5 SEP 72 20 14z

ULA041B
RR GCEN GSTS
DE GULA 041B
05/1959Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT; ALASKA POTABLE WATER
FRIDAY: 1 SEPTEMBER 1972
NEW PLANT MINITRACK: CONTINUED BALANCING TESTS. MAXIMUM CHLORINE
INJECTION BEING CONSUMED BY HIGH IRON CONTENT OF WELL WATER.
CALCIUM HARDNESS MUCH TOO LOW. RECURRING PROBLEMS WITH FLOAT
SWITCH IN PRESSURE TANK
NEW PLANT GIMORE: INSTALLING PRESSURIZED AIR BY PASS AND COATED
THE FLOAT SWITCH CHAMBERS WITH TARMASTIC.
NOTES: COMPLETED PLANS AND DRY RUN FOR THE DIESEL COOLANT SYSTEM
CLEANING.

05/2009Z SEP 72 GULA

1SEP 72 1727Z

ULA047B
RR GCEN GSTS
DE GULA 047B
01/1719Z
FM STADIR/ALASKA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
THURSDAY: 31 AUGUST 1972
NEW PLANT MINITRACK: OVERNIGHT PROBLEM WITH AIR LEAK ON PRESSURE TANK AND CUT OFF SWITCH FOR WELL PUMP. BELIEVE WE HAVE PROBLEMS RESOLVED. STARTED BALANCING TEST SERIES. STABILITY INDEX IS MINUS 0.9.
NEW PLANT GILMORE: RAN COMPLETE BALANCING TEST SERIES. STABILITY INDEX IS MINUS 0.2. WELL WATER HAS SLIGHT COLOR, PROBABLY TANIN. GLAUCONITE FILTRATION DOES NOT REMOVE COLOR. COLOR CAN BE REMOVED BY ACTIVATED CARBON FILTER. MORE ON THIS LATER.
NOTES: PLUMBING FOR DIESEL UNIT CLEANING COMPLETE. DRY RUN ON PROCEDURES WITH CLEANING TEAM TOMORROW.

01/1724Z SEP 72 GULA

31 [illegible] 03Z

V
ULA040A
RR GCEN GSTS
DE GULA 040
31/1957Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
WEDNESDAY: 30 AUG 72
NEWPLANT MINITRACK: ANTISIPHON VALVES OVERHAULED. ONE CHEMICAL FEED PUMP REPLACED. OPERATIONAL TESTS COMPLETED. ATTEMPTED TO FLUSH BUILDING SYSTEM LINES WITH FIRE HOSE. PLANT TIED INTO WELL. 80 GPM WELL PUMP THROTTLED TO 12 GPM. CURRENT AT 80 GPM WAS 20 AMPS PER LEG; AT 12 GPM CURRENT PER LEG IS 17 AMPS.
NEW PLANT GILMORE: REGAINED CHEMICAL CONTROL. STABILITY INDEX IS NEAR 0.0.

31/2001Z AUG 72 GULA

30AUG72 13 33Z

ULA054B
RR GCEN GSTS
DE GULA 054B
30/1328Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
TUESDAY: 29 AUGUST 1972
NEW PLANT ALASKA BUILDING: CHECKED STATION ALALYST AS THE TEST SERIES WERE RUN.
NEW PLANT MINITRACK: FIXED TWO STUBORN LEAKS, CONTINUED SYSTEM OPERATIONAL CHECKS, AND BACKWASHED THE SOFTENER.
NEW PLANT GILMORE: BALANCING TESTS STARTED ANEW.
NOTES: DRAFTING WORK ON PLANT LAYOUTS 75 PERCENT COMPLETE.
PLUMBER RETURNED TO WORK OF PREPARING DIESEL COOLANT SYSTEM FOR ACID CLEANING.

30/1832Z AUG 72 GULA

29AUG72 1812Z

ULA042B
RR GCEN GSTS
DE GULA 040B
29/1805Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS HSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY: 28 AUGUST 1972
NEW PLANT MINITRACK: OPERATIONAL TESTS HALTED. WORKED ON LEAKS AND CHEMICAL FEED SYSTEM PROBLEMS.
NEW PLANT GILMORE: BALANCING TEST SERIES SHOWED GREAT VARIATION FROM THE TREND THAT HAD BEEN ESTABLISHED TOWARD AN ACCEPTABLE STABILITY INDEX. PROBLEM WAS LOCATED IN THE CHEMICAL FEED ANTISIPHON VALVES WHICH WERE MALFUNCTIONING. REBUILT THREE ANTISIPHON VALVES, RECHARGED THE DILUTED CHEMICAL CONCENTRATIONS AND REPLACED CHEMICAL FEED HOSES. LIGHTS INSTALLED IN PLANT AREA.
NEW HOT WATER HEATER ARRIVED.
NOTES: NO PROGRESS ON DIESEL COOLANT SYSTEM PLUMBING. THE ONE PLUMBER AND ONE HELPER ON DUTY WORKED ON THE MINITRACK PROBLEMS.

29/1811Z AUG 72 GULA

28 Aug 72 1734Z

ULA034A
RR GCEN GSTS
DE GULA 034
28/1719Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SUMMARY FOR WEEK BEGINNING 21 AUG 72
HOURS WORKED: 21 AUG-12, 22 AUG-9, 23 AUG-15, 24 AUG-10, 25 AUG-10,
26 AUG 11, 27 AUG-5. OVERTIME WORKED - 26 HOURS.
SUMMARY OF WORK:
NEW PLANT ALASKA BUILDING: ALL WORK COMPLETED. STATION ANALYST
CHECKED OUT ON ALL DETAILS OF OPERATION AND MAINTENANCE.
NEW PLANT MINITRACK:
MINIMUM PROGRESS DUE TO WATER METER AND LEAKAGE PROBLEMS.
NEW PLANT GILMORE: ALL CONTROL, HYDRAULIC AND SYSTEMS TESTS
COMPLETED. PLANT TIED TO WELL AND CHEMICAL BALANCING STARTED.
NOTES: SOFFENER INSTALLED TO CONTROL SCALING ON ALASKA BUILDING
AIR CONDITIONING HEAT EXCHANGER. PLUMBING WORK FOR CHEMICAL
CLEANING OF DIESEL COOLANT SYSTEM 75 PERCENT COMPLETE.

28/1722Z AUG 72 GULA

28 AUG 72 1727Z

ULA033A
RR GCEN GSTS
DE GULA 033
28/1715Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY 26 AUGUST 1972
NEW PLANT ALASKA BUILDING RECOMMENDATIONS: .
1. STRICT ADHERENCE TO TUESDAY AND FRIDAY SCHEDULES
2. STRICT ADHERENCE TO PROPER TESTING TECHNIQUES AND GOOD LABORATORY PROCEDURES AS DEMONSTRATED.
3. REPLACE WELL PUMP WHEN REQUIRED WITH 30GPM UNIT.
NEW PLANT MINITRACK:
STARTED TO RUN THE OPERATIONAL TEST SERIES. ENCOUNTERED SEVERAL CONTROL INSTRUMENT PROBLEMS TWO LEAKS AND A RUPTURED CHEMICAL FEED TANK. MUCH EFFORT LITTLE PROGRESS AT MINITRACK TODAY LIKE SHOVELING SAND WITH A PITCH FORK.
NOTES: WORK CONTINUES ON PLUMBING MODIFICATIONS TO NR. 1 CAT DIESEL. IMPOSSIBLE TO MEET MY 31 AUGUST DEPARTURE DATE FROM ALASKA.

28/1718Z AUG 72 GULA

26AUG72 1981Z

ULA043B
RR GCEN GSTS
DE GULA 043B
26/1842Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
FRIDAY: 25 AUGUST 1972
NEW PLANT ALASKA BUILDING:
ELECTRICAL WORK COMPLETED. STATION ANALYST CHECKED OUT ON ALL
TEST METHODS THAT ARE USED. REQUIRED TEST EQUIPMENT ON HAND.
ALL REAGENTS FOR TESTS TABULATED AND GIVEN TO LOGISTICS PERSONNEL
FOR AUTOMATIC RESUPPLY ON FOUR MONTH INTERVALS. POTABILITY
AND CORROSION/SCALING CONTROL STATUS OF TREATED WATER IS
VERY GOOD. STABILITY INDEX IS PLUS 0.5. TODAY THE PLANT WAS
TURNED OVER TO STATION PERSONNEL FOR OPERATION AND MAINTENANCE.
NEW PLANT MINITRACK:
AWAITING REPLACEMENT WATER METER. SOME PAINT WORK ACCOMPLISHED.
NEW PLANT GILMORE:
THIRD SERIES OF BALANCING TESTS WERE CONDUCTED. STABILITY
INDEX BEING PULLED INTO LINE AS FOLLOWS:
WEDNESDAY S.I. WAS MINUS 3.5.
THURSDAY S.I. WAS MINUS 3.3.
FRIDAY S.I. WAS MINUS 1.7.
HOT WATER HEATER TO BE PROCURED. CEILING LIGHT TO BE INSTALLED.
NOTES: WORK ON DIESEL COOLANT SYSTEM DELAYED ONE DAY BECAUSE
OF PIPE DIE PROBLEM. I WILL MISS MY 31 AUGUST DEPARTURE DATE
BY SEVERAL DAYS.

26/1849Z AUG 72 GULA

OPTIONAL FORM NO.
MAY 1962 EDITION
GSA FPMR (41 CFR) 101-11.6
UNITED STATES GOVERNMENT

Memorandum

TO : W. LaFluer, Code 850 DATE: 25 August 1972

FROM : E. Eisele
ULA STDN Station

SUBJECT: Potable Water Treatment Plants

I believe it is pertinent that you are afforded a look at the general corrosion problem encountered at this station in our potable water treatment plants. The specimens enclosed herewith illustrate the extent of the attack. Our new treatment plants at the Alaska, Minitrack and Gilmore Buildings will produce stabilized potable water with good corrosion control. One plant is on the line, the other two will be completed within two weeks.

Please save specimens for the network corrosion impact museum. They will be picked up later by Code 822.

Edward J. Eisele

Edward J. Eisele
Station Director

EJE:nlb

cc: L. Brown, Code 822
H. Call, Bendix

Enc. (1)

25 AUG 72 19 34Z

ULA044B
RR GCEN GSTS
DE GULA 044B
25/1853Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
THURSDAY: 24 AUGUST 1972
NEW PLANT ALASKA BUILDING:
STABILITY INDEX AT PLUS 0.5.
SMALL CABINET TYPE WALL LABORATORY 75 PERCENT COMPLETE.
ELECTRICAL WORK ON PILOT LIGHT FOR BACKWASH PUMP AND ON THE SOLENOID IN THE SOFTENER BY PASS IS NOW IN PROGRESS.
NEW PLANT MINITRACK:
PROBLEM OF LOSS OF GLAUCONITE WITH BACKWASH EFFLUENT FOUND AND CORRECTED.
NEW PLANT GILMORE:
SECOND SERIES OF BALANCING TESTS CONDUCTED.
CHEMICAL FEED CONCENTRATIONS OF CA(CI0)2 AND NA2CO3 ALTERED.
COMPLETE BY PASS OF SOFTENERS NOW IN EFFECT.
NOTES:
PLUMBING WORK ON NUMBER ONE CAT DIESEL TO PERMIT CHEMICAL CLEANING OF COOLANT SYSTEMS NOW IN PROGRESS. THE PAINTING ACTIVITY REFERRED TO IN THESE REPORTS IS ALWAYS ON A NON-INTERFERENCE BASIS AND IS ACCOMPLISHED BY A PLUMBER HELPER OR THE STATION PAINTER.

25/1934Z AUG 72 GULA

24 AUG 72 17 42Z

ULA05 08
RR GCEN GSTS
DE GULA 05 08
24/1733Z
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY: 23 AUGUST 1972
THE NEW PLANT AT MINITRACK.
INSERTED A SECTION OF PIPE TO REPLACE INOPERATIVE WATER METER
TO CONTINUE WORK. BACKWASHED FE FILTERS WITH TREATED WATER.
WORKED ON AUTO TIMERS ON FE FILTERS AND SOFTENER.
ELECTRICAL WORK CONTINUED.
THE NEW PLANT AT GILMORE:
CHEMICAL FEED CONCENTRATIONS HIGH. LOWER CONCENTRATION OF CA
(C10)2 AND K MN 04 NOW IN EFFECT. FIRST SERIES OF BALANCE
TESTS. IT NOW APPEARS ALMOST CERTAIN THE SOFTENERS MUST BE
LARGELY BYPASSED IN ORDER TO ACHIEVE A REASONABLE STABILITY
INDEX. PRESENT S.I. IS FAR INTO MINUS SIDE.
NOTES: THE SOFTENER ON THE WATER SPRAY FOR THE A/C HUMIDIFIER
IN THE ALASKA BUILDING WAS COMPLETED.
DOWN TO ONE PLUMBER AND ONE HELPER. DID NOT COMPLETE THE PLUMBING
THAT WOULD PERMIT THE CLEANING AND TREATING OF THE TWO COOLANT
SYSTEMS ON THE NUMBER 1 CAT. DIESEL.

24/1740Z AUG 72 GULA

23 AUG 72 19 10Z

ULA028A
RR GCEN GSTS
DE GULA 028
23/1747Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

M. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
TUESDAY: 22 AUGUST 1972
NEW PLANT ALASKA BUILDING. PLANT IS READY TO TURN OVER TO STATION PERSONNEL. STABILITY INDEX IS PLUS 0.4. OPERATIONAL LOG SHEETS FOR STATION PERSONNEL NOW READY.
NEW PLANT AT MINITRACK:
OPERATING AIR PRESSURE CHECKED OUT. HYDRAULIC TESTS PARTIALLY COMPLETED. WATER METER HAD TO BE REMOVED FROM SYSTEM BECAUSE IT SHOWS NO FLOW.
NEW PLANT AT GILMORE:
FINAL TESTS OK ON ALL FLOW, HYDRAULIC AND ELECTRIC SYSTEMS. COMPLETED ALL BACKWASHING. PURGED WELL LINE. WELL PUMP THROTTLED TO 4 GPM WITH NO INCREASE IN PUMP CURRENT. CALCULATED CONCENTRATIONS OF CA (CIO)2, NA2 CO3 AND K MNO4 NOW INJECTED AS WELL PUMP OPERATES. BALANCING TESTS TO BEGIN SHORTLY.
NOTES: INSTALLATION OF SOFTENER TO PREVENT SCALE BUILD UP ON HEAT EXCHANGER IN ALASKA BUILDING A/C SYSTEM IS 75 0/0 COMPLETE. DUE TO A SLIGHT POSSIBILITY OF ACID FUME CARRYOVER INTO AIR DUCTING AND EQUIPMENT THE ACID CLEANING WILL BE OMITTED. ZERO HARDNESS WATER SHOULD SLOWLY DISSOLVE THE CA MG SCALE.

23/1800Z AUG 72 GULA

22 AUG 72 17 22z

ULA037B
RR GCEN GSTS
DE GULA 037B
22/1708Z
FROM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS
SUBJECT; ALASKA POTABLE WATER
MONDAY: 21 AUG 1972
NEW PLANT AT GILMORE: CHECKED OPERATIONAL RESPONSE OF EACH ELECTRICAL CIRCUIT. THERE ARE SIXTEEN IN ALL. FIVE BACKWASH RESPONSED, THREE PUMPS, FOUR SWITCH RESPONSES FOR LEVEL AND PRESSURE CONTROL, THREE CHEMICAL FEED CIRCUITS AND A SOLENOID CIRCUIT. BACKWASHED TWO FE FILTERS. DID NOT ACHIEVE 'TIE IN' TO WELL. CHEMICAL FEEDS SET ONE OPERATIONAL PROBLEM AROSE: A PARALLEL FLOW THROUGH SOFTENERS OCCURED DURING FE FILTER BACKWASHING. PROBLEM IS EASILY CORRECTED.
NOTE: ONE PLUMBER AND ONE HELPER AT WORK. SOME PROGRESS ON SOFTENER FOR A/C SCALE CONTROL. IF ALL GOES WELL I WILL DEPART ALASKA ON 31 AUG 72.

22/1714Z AUG 72 GULA

21 AUG 72 16 07z

ULA036B
RR GCEN GSTS
DE GULA 036B
21/1742Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS
SUBJECT; ALASKA POTABLE WATER
SUMMARY FOR WEEK BEGINNING 14 AUG 72
HOURS WORKED: 14 AUG-11, 15 AUG-11, 16 AUG-11, 17 AUG-9, 18 AUG-11 AND 19 AUG-10, OVERTIME WORKED 22 HOURS. SUMMARY OF WORK.
NEW PLANT ALASKA BUILDING: STABILITY INDEX FIRMLY ESTABLISHED AT PLUS 0.3. INSTALLED SMALLER PLUG VALVE AND SOLENOID VALVE FOR SOFTENER BY PASS.
NEW PLANT MINITRACK: PLUMBING COMPLETED. AIR TESTS COMPLETED FILTERS PROPERLY LOADED. READY FOR HYDRAULIC TESTS
NEW PLANT GILMORE: HYDRAULIC TESTS COMPLETED. ELECTRICAL CONTROLS COMPLETED. DETOXIFICATION COMPLETED. COLD WATER SYSTEM FLUSHED. READY TO CONNECT TO WELL WATER
NOTES: WORK PROGRESSED ON A/C SCALE REMOVAL AND DIESEL COOLANT SYSTEM CLEANING

21/1801Z AUG 72 GULA

21 AUG 72 13 34Z

ULA037B
RR GCEN GSTS
DE GULA 037B
21/1744Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS
SUBJECT: ALASKA POTABLE WATER
SATURDAY: 19 AUGUST 1972
NEW PLANT: ALASKA BLDG:
REPLACED 1 1/2 INCH THROTTLING PLUG VALVE IN SOFTENER BY PASS WITH A 1 INCH PLUG VALVE AND A 1 INCH SOLENOID VALVE FOR CLOSER CONTROL. IN THE MANUAL BACKWASH CYCLE THE BACKWASH PUMP HAS BEEN LEFT RUNNING TWICE AFTER THE CYCLE. THIS UPSETS CHEMICAL BALANCE. INDICATOR LIGHTS FOR BACKWASH PUMP RUNNING TO BE INSTALLED.
STABILITY INDEX - 0.5.
NEW PLANT AT MINITRACK: PLUMBING COMPLETED. READY FOR HYDROSTATIC TEST & DETOXIFICATION RUNS. ELECTRICAL WORK REMAINS TO BE DONE.
NEW PLANT AT GILMORE: ALL CONSTRUCTION COMPLETE, HYDROSTATIC TESTS COMPLETE DETOXIFICATION COMPLETE. START BALANCING TESTS NEXT WEEK. ANOTHER ATTEMPT TO SALVAGE HOT WATER HEATER FAILED. ONE HUNDRED PSI OF WATER PRESSURE FROM FIRE ENGINE WOULD NOT BLOW OUT THE CORROSION SLUDGE. BUILDING HOW HAS COLD WATER ONLY. SOME ELECTRICAL WORK REMAINS. FLUSHED COLD WATER DISTRIBUTION SYSTEM WITH 100 PSI OF TREATED WATER FROM FIRE TRUCK.
NOTES: PREPARATORY WORK ON DIESEL COOLANT SYSTEM CLEANING AND A/C COIL DESCALING CONTINUES.

21/1822Z AUG 72 GULA

21 AUG ... Z

ULA 035A
RR GCEN GSTS
DE GULA Ø35
21/1743Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
FRIDAY: 18 AUGUST 1972
MINITRACK PLANT: LOADED THE LARGE SOFTENER WITH SODUIM ZEALITE, ELECTRICAL WORK STARTED.
GLIMORE PLANT: REMOVED LARGE WATER HEATER FROM BUILDING SYSTEM AND FOUND IT PLUGGED WITH CORROSION PRODUCTS. 1ØØPSI WATER PRESSURE REQUIRED TO FORCE CHANNEL THROUGH ACCUMULATED SLUDGE, TOO CORRODED TO REPAIR. MUST BE REPLACED. DETOXIFICATION OF PLANT COMPLETED. ELECTRICAL WORK 9Ø PERCENT COMPLETED.
R&R PLANT: COMPLETED THE SKETCHES FOR THE SCHEMATIC DRAWING OF EXISTING PLANT.
NOTE: COOLANT SYSTEM CLEANING OF THE NBR 1 CAT DIESEL SCHEDULED FOR WEDNESDAY 23 AUG 1972.

21/1837Z AUG 72 GULA

STATION MEMORANDUM

DATE: 17 August 1972

TO: All Personnel
NASA STDN Station
Fairbanks, Alaska

SUBJ: Use of Treated Water on the Alaska Station

CONDITIONS: Due to the extremely heavy iron, manganese and carbon dioxide content of the well waters on this station the treatment plants can supply a very limited amount of good potable water.

RESTRICTIONS: Water from the treatment plants will be limited to drinking and in house useage. No treated water will be used on the lawns, on equipment washing or on contractor requirements.

G. V. Bartley
Station Manager

E. J. Eisele
Station Director

GVB:nlb

ULA242B
RR GCEN GSTS
DE GULA 042B
18/1829Z
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS
SUBJECT ALASKA POTABLE WATER
THURSDAY: 17 AUGUST 1972
NEW PLANT: MADE ADDITIONAL CHANGES TO CHEMICAL FEED CONCENTRATIONS.
MINITRACK PLANT: COMPLETED THE CRITICAL LOADING OF THE FE FILTERS. FROM BOTTOM UP: ONE FOOT OF 1/2 TO 3/4 INCH ROUND GRAVEL. 5 INCHES OF 1/4 TO 1/2 INCH ROUND GRAVEL AND 3 INCHES OF 1/8 TO 1/4 INCH ROUND GRAVEL. 30 INCHES OF GLAUCONITE ON TOP OF GRAVEL. THIS 600 POUND LOADING MUST BE MADE THROUGH SMALL OPENING AT TOP OF FILTER.
GILMORE PLANT: AIR CHECK VALVE BETWEEN PRESSURE TANK AND PRESSURE REGULATOR HALTED LOSS OF AIR FROM THE TANK. BUILT UP CHLORINE CONCENTRATION TO CONTINUE DETOXIFICATION DUE TO GOLD MINING OPERATIONS UPSTREAM AND RESULTING MUDDY CREEK WATER, THE STATION IS NOW BEING SUPPLIED NONPOTABLE WATER FROM THE NEW GILMORE PLANT. THIS MAKES DETOXIFICATION A MUCH LONGER PROCESS. THE BUILDINGS DISTRIBUTION SYSTEM IS LOADED WITH IRON SLIME. MUST BE CLEANED WITH STRONG NA3PO4 SOLUTION. THE WASH EFFLUENT MUST BE PLUMBED AWAY FROM SEPTIC TANK TO PRESERVE THE MICRO-BIO DIGESTION PROCESS IN THE TANK.
NOTE: WORK PROCEEDS ON PREPARATION OF ONE DIESEL FOR COOLANT SYSTEM CLEANING AND THE REBUILDING OF ONE OLD SOFTENER FOR THE SPRAY CIRCUIT OF THE ALASKA BUILDING AIR CONDITIONING UNIT.

18/1844Z AUG 72 GULA

17AUG72 17 5Z

ULA036B
RR GCEN GSTS
DE GULA 036B
17/1711Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY: 16 AUGUST 1972
MINITRACK PLANT: TIED THE TREATMENT PLANT INTO THE BUILDING - - - DISTRIBUTION SYSTEM VALVE CLOSED. BUILDING REMAINS ON UNTREATED WELL WATER. AIR TESTS COMPLETED. PAINT WORK CONTINUED.
GILMORE PLANT: FULL DAY SPENT ON MULTIPLE DISMANTLING AND REPAIRING OF NEW AIR PRESSURE REGULATOR WHICH LEAKED AT FLANGE EDGES. COULD NOT COMPLETE DETOXIFICATION.

17/1711Z AUG 72 GULA

ULA007B
RR GCEN GSTS
DE GULA 007B
18/0124Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R WOLLERICK CODE 822
GCEN/E THOMAS NSG

H.GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
TUESDAY: 15 AUGUST 1972
MINITRACK PLANT: COMPLETED INITIAL AIR TESTING OF FLOW SYSTEM. TEST PRESSURE WAS 15 PSI. CONTINUED PAINT WORK. ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: WORKED ON HYDRAULIC TESTS. CORRECTED THREE LEAKS. BEGAN DETOXIFICATION OF THE PLANT. ONE PLUMBER AND ONE HELPER AT WORK. ELECTRICAL WORK CONTINUED.
NOTES: THE REPORTS CONCERNING PLUMBERS AND HELPERS REFER ONLY TO THE TEMPORARY HIRES. THEY DID NOT REFLECT THE MULTIPLE EFFORTS OF THE PERMANENT ELECTRICIANS, PLUMBER CARPENTER AND STAFF. BEGAN THE PLANNING TO CLEAN ONE DIESEL UNIT.

18/0127Z AUG 72 GULA

15AUG72 17 40Z

ULA042A
RR GCEN GSTS
DE GULA 042
15/1720Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY: 14 AUGUST 1972
NEW PLANT: STABILITY INDEX IS PLUS 0.4
MINITRACK PLANT: AIR SYSTEM COMPLETED. INSTALLED SEVERAL SAMPLING POINTS. CLEANING UP ODDS AND ENDS TO PREPARE FOR AIR TESTING. ONE PLUMBER ONE HELPER AT WORK.
GILMORE PLANT: COMPLETED AIR TESTING AT 25PSI. REPAIRED SEVERAL SMALL LEAKS. STARTED PREPARATION FOR DETOXIFICATION. ELECTRICAL WORK IN PROGRESS. ONE PLUMBER ONE HELPER AT WORK.
NOTES: CORRECTING DESIGN SKETCHES TO REFLECT EXACT (AS BUILT) LAYOUTS.

15/1740Z AUG 72 GULA

14AUG72 18 50Z

ULA038A
RR GCEN GSTS
DE GULA 038
14/1833Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SUMMARY FOR WEEK BEGINNING 7 AUG 1972
HOURS WORKED: 7 AUG - 9, 8 AUG - 13, 9 AUG - 12, 10 AUG - 12,
11 AUG - 12, 12 AUG - 13, AND 13 AUG - 5, OVERTIME WORKED 35 HOURS.
NEW PLANT: REDUCED WATERFLOW THROUGH PLANT FROM 50 TO 30 GPM
CHANGED CHEMICAL FEED CONCENTRATIONS TO COMPENSATE FOR REDUCTION
AND TO HOLD PROPER PLUS STABILITY INDEX.
MINITRACK PLANT: FAIR PROGRESS ON INSTALLATION OF WATER METER,
BACKFLUSH EFFLUENT DRAINAGE TO SUMP AND PLUMBING FOR AUTO CONTROLS.
GILMORE PLANT: ALL PLUMBING COMPLETED. THE PLANT IS READY FOR AIR
PRESSURE TESTING.
R&RR PLANT: COMPLETED CHEMICAL PROFILE OF THE WELL WATER AND
TREATMENT SYSTEM.

14/1837Z AUG 72 GULA

14AUG 72 19 23Z

ULA041A
RR GCEN GSTS
DE GULA 041
14/1917Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY: 12 AUGUST 1972
NEW PLANT: DUE TO THROTTLING OF WELL PUMP FROM 50 TO 30 GPM TO PROTECT FILTERS THE CONCENTRATION OF EACH CHEMICAL FEED WAS REDUCED BY ONE THIRD TO MAINTAIN PROPER MICROBIO PROTECTION AND THE POSITIVE STABILITY INDEX.
MINITRACK PLANT: CONTINUED TANK PAINTING. WATER METER INSTALLED. SAFETY VALVE INSTALLED. WORKED ON AIR LINE, FILTER AND REGULATION SYSTEM. ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: COMPLETED THE HYDRAULIC AND AIR SYSTEMS. PLANT READY FOR INITIAL AIR TESTING. ONE PLUMBER AND ONE HELPER AT WORK.
NOTE: DUE TO CORROSION ATTACKS ON THE TANKS AND INSPECTIONS AFTER CLEANING THE OLD 100 PSI SAFETY VALVES WERE REPLACED WITH NEW 75 PSI UNITS AT MINITRACK AND GILMORE.

14/1921Z AUG 72 GULA

#V
ULA043A
RR GCEN GSTS
DE GULA 043
14/1933Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSO

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
FRIDAY: 11 AUGUST 1972
MINITRACK PLANT: BEGAN FINAL SERIES OF CHEMICAL TESTS ON WELL WATER TO PERMIT PROGRAMMING CHEMICAL TREATMENT IN THE REDESIGNED PLANT. IRON CONTENT AT 21.0 PPM. THIS IS ABOUT 7 TIMES THE IRON LEVEL CONSIDERED AS THE MAXIMUM IRON CONCENTRATION THAT SHOULD BE FILTERED IN A CLOSED SYSTEM. MUCH CARE WILL BE REQUIRED IF THE PRODUCTION OF GOOD POTABLE WATER IS TO BE MAINTAINED AFTER THE PLANT IS CHEMICALLY BALANCED. TREATED WATER USEAGE MUST BE LIMITED TO PERSONNEL. A PROPOSED CREEK PUMP WILL BE ABLE TO SUPPLY ALL NON-POTABLE WATER REQUIRED FOR LAWNS AND EQUIPMENT WASHING. SERIOUS CONSIDERATION SHOULD BE GIVEN TO A NEW WELL FOR MINITRACK. WORKED ON CONTROL LINES TO THE NEW FE AUTOBACK WASH VALVES AND TIMERS. INSULATED RECEIVER TANK. RIGGED LOW LEVEL BLOW DOWN FOR RECEIVER TANK. ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: COMPLETED BACKWASH DRAINAGE SYSTEM. WATER METER INSTALLATION COMPLETED. HG SWITCHES INSTALLED ON HOLDING TANK. ONE PLUMBER AND ONE HELPER AT WORK.
NOTE: ORGANIZING TEST DATA FOR INCLUSION IN ALASKA STDN STATION POTABLE WATER WELLS AND TREATMENT PLANT REPORT.

14/1939Z AUG 72 GULA

11 [illegible] 3Z

M
ULA042A
RR GSTS GCEN
DE GULA 042
11/1825Z
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS MSG

H.GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
THURSDAY 10 AUG 1972
NEW PLANT: THROTTLED THE PUMP FLOW INTO THE TREATMENT PLANT TO 32 GPM FROM 50 GPM. AMPERAGE ON EACH PHASE OF WELL PUMP HELD AT 5, NO INCREASE.
MINITRACK TRACK: BACK FLUSH DRAINAGE LINES TO SUMP INSTALLED. WORKED ON TANK COVERAGE AND WATER METER INSTALLATION.
GILMORE PLANT: AIR LINE INSTALLED, WORKED ON BACKFLUSH DRAINAGE LINES. WORKED ON ELECTRICAL INSTALLATION.
NOTE: SHOULD RUN INITIAL AIR PRESSURE TESTS ON BOTH PLANTS WITHIN SEVERAL DAYS.

11/1829Z AUG 72 GULA

ULA046A
RR GSTS GCEN
DE GULA 046
10/2239Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY: 9 AUGUST 1972
NEW PLANT: PLANS COMPLETE TO THROTTLE FLOW OF WELL PUMP AND
CHECK THE VARIOUS CRITICAL CURRENT DEMANDS OF PUMP MOTOR.
STABILITY INDEX IS PLUS 0.3
MINITRACK PLANT: WORKED ON BACKWASH EFFLUENT DISCHARGE
PLUMBING. RESOLVED PLUMBING PROBLEMS FOR WATER METER.
ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: AIR FILTER AND PRESSURE REGULATOR FOR PRESSURE TANK
INSTALLED. AIR LINE ROUTE TO COMPRESSOR LAID OUT.
ELECTRICAL WORK NOW PROGRESSING WELL. WATER METER INSTALLED. ONE
PLUMBER AND ONE HELPER AT WORK.
NOTE: CLEANING UP FINAL ITEMS ON DESIGN PRINTS OF THE
THREE PLANTS TO ACHIEVE (AS BUILT) PRINTS.

10/2245Z AUG 72 GULA

ULA042A
RR GSTS GCEN
DE GULA 042
09/1722Z
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
TUESDAY: 8 AUGUST 1972
NEW PLANT: CAPACITY TEST ON WELL PUMP GAVE 50 GPM. EMPIRICAL
FORMULA RATES FE FILTER AT 30 GPM, MANUFACTURER ADVISES 25 GPM.
PUMP WILL BE THROTTLED.
MINITRACK PLANT: SODIUM ZEOLITE CLEANED AND REGENERATED. PRESSURE
TANK PAINTED. ONE HELPER AT WORK.
GILMORE PLANT: HOLDING TANK LEVEL SWITCHES OVERHAULED. WORKED ON
MOUNTING WATER METER.
R&RR PLANT: COMPLETED CHEMICAL PROFILE OF WELL AND TREATMENT PLANT
WATERS.
NOTES: PRESSURE REGULATORS AND FILTERS FOR AIR LINES FOR MINITRACK
& GILMORE FOUND IN STATION SUPPLY. COMPLETED CHEMICAL TEST
REPORTING FORM AND ANALYST DIRECTIVE FOR THE ALASKA PLANTS.
A/C HUMIDIFIER SCALING PROBLEM WILL BE RESOLVED BY AN
INHIBITED ACID CLEANING AND INSTALLATION OF SOFTENER IMMEDIATELY
UP STREAM FROM RESERVOIR TO PROVIDE WATER TO HUMIDIFIER WITH
0.0 HARDNESS.

09/1735Z AUG 72 GULA

9AUG72 0216z

ULA011B
RR GSTS GCEN
DE GULA 011B
O/081442
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

N. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY: 7 AUGUST 1972
NEW PLANT: STABILITY INDEX IS PLUS 0.2.
MINITRACK PLANT: CONTINUED MANIFOLD PIPING WORK.
GILMORE PLANT: HG SWITCHES WILL BE OVERHAULED BY HYDRO MECHANICS, SECOND COAT OF PAINT APPLIED TO HOLDING AND PRESSURE TANKS. TRANSFER AND PRESSURE PUMPS PLUMBING INSTALLED. PUMPS ANCHORED TO FLOOR FLOW SYSTEM RESTRICTED TO THREE QUARTER INCH LINE INTO PRESSURE TANK TO PREVENT OVERLOADING THE SYSTEMS FILTERS.
R&RR PLANT: COMPLETED WELL TEST SERIES: PH EQUALS 6.3 AT 48 DEG F, FE EQUALS 5.5 PPM, CHLORINE EQUALS 0.0PPM, CA AS CACO3 EQUALS 156.0 PPM, TOTAL ALKALINITY AS CACO3 EQUALS 188.0PPM FREE CO2 AS CO2 EQUALS 34.0PPM AND TDS BY HYDROMETER EQUALS 1200PPM. VERY HIGH LEVEL OF ENTRAINED GASES WHICH DISAPATE IN ABOUT 3 MINUTES IN A 50CC GRADUATED CYLINDER. STABILITY INDEX IS MINUS 1.8, QUITE CORROSIVE. ALL CHEMICAL FACTORS ON THE TREATMENT PLANT TO BE TESTED.
NOTE: MIKE MCHUGH ARRIVED.

O/0815GZ AUG 72 GULA

7AUG72 ... 03Z

M

ULA052A
RR GCEN GSTS
DE GULA 052
07/1802Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SUMMARY FOR WEEK BEGINNING 31 JULY 1972.
HOURS WORKED: 31 JULY -11, 1 AUG -12, 2 AUG -9, 3 AUG -9, 4 AUG -9,
5 AUG -13 AND 6 AUG -4. OVERTIME -21 HOURS.
WORK ACCOMPLISHED:
NEW PLANT: CONTINUED STABILITY TESTS.
DAILY TESTS HAVE NOT BEEN NECESSARY FOR SOMETIME, HOWEVER, THE
LAB IS IN THIS PLANT AND IT IS AN OPPORTUNITY TO PLOT DRIFT
CHARACTERISTICS ETC ON A NON-INTERFERENCE BASIS WITH THE OTHER
WORK. SWITCHED FROM NAOH TO NA2 CO3 FOR PH AND ALKALINITY
CONTROL AND ACHIEVED A PLUS 0.2 STABILITY INDEX.
MINITRACK PLANT: REDESIGNED MUCH OF THE FIRST MODIFICATION LAYOUT
BECAUSE OF THE CONTINUOUS SEQUENCING TYPE OF AUTO BACKWASH CONTROLS.
RECEIVED FOR THE FE FILTERS. RESOLVED SEVERAL ENGINEERING
PROBLEMS. FAIR PROGRESS ON PLUMBING WORK.
GILMORE PLANT: RESOLVED SEVERAL ENGINEERING PROBLEMS. GOOD
PROGRESS ON THE COMPLEX PLUMBING WORK.
R&RR. PLANT: STARTED TEST SERIES ON PLANT AND WELL WATERS.

07/2152Z AUG 72 GULA

ULA053A
RR GCEN GSTS
DE GULA 053
07/1603Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY: 5 AUGUST 1972
NEW PLANT: STABILITY INDEX IS NOW PLUS 0.3.
MINITRACK PLANT: GOOD PROGRESS ON THE COMPLEX FE FILTERS
MANIFOLD. ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: LEVEL CONTROL PROBLEM FOR HOLDING TANK SOLVED
BY TWO MERCURY SWITCHES FOUND ON THE STATION. CLEANING AND
OVERHAULING SAME. WORKED ON PIPING SYSTEM FOR THE HG SWITCHES.
PAINTED HOLDING AND PRESSURE TANKS. ONE PLUMBER AND ONE HELPER
AT WORK.
BARR PLANT: BEGAN TEST. SERIES TO CONSTRUCT CHEMICAL PROFILE OF
WELL AND PLANT WATERS.
NOTE: WITH EXCEPTION OF THE ELECTRICAL REQUIREMENTS THE NEW PLANTS
AT GILMORE AND MINITRACK ARE 75 PERCENT COMPLETE. CHEMICAL TESTS
AND BALANCING WILL BEGIN AS SOON AS THE PLANTS ARE COMPLETED,
TESTED HYDRAULICALLY AND DETOXIFIED.

07/2210Z AUG 72 GULA

ULA020A
RR GSTS GCEN
DE GULA 020
06/0347Z
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
FRIDAY: 4 AUGUST 1972
NEW PLANT: THE CHANGE FROM NAOH TO NA2CO3 FOR PH AND ALKALINITY CONTROL RAISED THE STABILITY INDEX TO PLUS 0.2. THIS IS A GREAT IMPROVEMENT.
MINITRACK PLANT: PIPING BETWEEN SOFTENER AND PRESSURE TANK COMPLETED. RESOLVED THE BRINE TANK PROBLEM. WORKED ON FE FILTER MEDIA. ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: WORKED ON BACK WASH PUMP PIPING. POSITIONED THE PRESSURE TANK. RESOLVED THE BRINE TANK PROBLEM. ONE PLUMBER AND ONE HELPER AT WORK.

06/0512Z AUG 72 GULA

6 AUG 72 06 10z

ULA021B
RR GSTS GCEN
DE GULA 021B
06/0349Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
THURSDAY: 3 AUGUST 1972
NEW PLANT: STUDY OF OPTIMUM FLOW RATES THROUGH PLANT. STUDY OF NAOH ALTERNATIVE TO RAISE PH AND ALKALINITY TO ADVANCE STABILITY INDEX TO POSITIVE SIDE OF 0.0.
MINITRACK PLANT: BEGAN THE MANIFOLD WORK ON AUTO CONTROLS FOR FE FILTERS ONE PLUMBER AND ONE HELPER AT WORK.
GILMORE PLANT: CONTINUED MANIFOLD PLUMBING FOR FE FILTERS AND SOFTENERS. POSITIONED HOLDING TANK. ONE PLUMBER AND ONE HELPER AT WORK.
NOTES: ADDITIONAL DISCUSSION ON PROPER HANDLING AND CARE OF THE PLANTS. HEAVY ELECTRICAL WORK LOAD REQUIRED TO ACHIEVE OPERATIONAL STATUS AT GILMORE, NOMINAL AT MINITRACK.

06/0601Z AUG 72 GULA

3 AUG 72 18 29Z

ULA048A
RR GCEN GSTS
DE GULA 048
03/1802Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY: 2 AUGUST 1972
NEW PLANT: STABILITY INDEX IS MINUS 0.2. USED MUNICIPAL POWERPLANTS TDS METER ON A SERIES OF NEW WELL AND TREATMENT PLANT TESTS: NEW WELL WATER AVERAGED 300PPM. NEW TREATMENT PLANT WATER AVERAGED 340PPM. ALL TESTS WITHIN 5PPM OF THE ABOVE FIGURES. THE HYDROMETER READINGS OF TDS ARE AVERAGING 800 AND 900 REPECTIVELY.
MINITRACK PLANT: REDESIGN TO ACCOMODATE THE FE AUTO FILTERS COMPLETED.
GILMORE PLANT: HOLDING TANK INSULATION COMPLETED. GOOD PROGRESS ON FE FILTER AND SOFTENER MANIFOLDS. ONE PLUMBER AND TWO HELPERS AT WORK.

03/1819Z AUG 72 GULA

ØM
ULA045A
RR GCEN GSTS
DE GULA 045
02/1740Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

2 AUG 72 17 48Z

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
TUESDAY 1 AUGUST 1972
NEW PLANT: FINAL CHECK TODAY ON BACKWASH FREQUENCY.
STABILITY INDEX MINUS 0.3
MINITRACK PLANT: CONTINUATION OF SYSTEM PIPING. FINAL INTERNAL CLEANING AND INSULATION OF HOLDING TANK. PIPE DESIGN ALTERED TO ACCOMADATE THE NEW AUTO BACKWASH CONTROLS.
GILMORE PLANT: CONTINUATION OF SYSTEM PIPING. INTERNAL COATING OF PRESSURE TANK CURED. STARTED THE EXTENSIVE ELECTRICAL WORK NECESSARY TO RUN THE SYSTEM.
NOTES: INVENTORY AND BINING OF SUPPLIES FOR BETTER CONTROL. DETAILED WORK ITEMS AND TIMES NECESSARY TO OPERATE AND MAINTAIN ALASKA WATERPLANTS. THE WATER METERS FOR GILMORE AND MINITRACK ARRIVED.

02/1745Z AUG 72 GULA

1 AUG 72 19 05Z

#
ULA043A
RR GCEN GSTS
DE GULA 043
01/1747Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY: 31JULY 1972
NEW PLANT: DETAILED DISCUSSION REGARDING THE PLANTS MINUS 0.2 TO 0.3 STABILITY INDEX WITH FAIRBANKS MUNICIPAL WATER ANALYST. HE AGREED THE INDEX WAS AS NEAR A 0.0 LEVEL AS POSSIBLE IN OUR CLOSED SYSTEM.
MINITRACK PLANT: INLET LINES TO SEDIMENT LEG AND RECEIVER TANK COMPLETED. MODIFICATIONS TO INLET AND DISCHARGE OF SOFTENER COMPLETED THE AUTO CONTROLS FOR BACKWASHING THE FE FILTERS ARRIVED.
GILMORE PLANT: INLET LINES TO SEDIMENT LEG AND RECEIVER TANK COMPLETED. RECEIVER TANK TO FE FILTERS LINE COMPLETED. WORKED CONTINUED ON FE FILTER MANIFOLDS. WORKED ON CURING FIRST TARMASTIC COAT INSIDE PRESSURE TANK.
NOTES: PICKED UP AWWA SPECIFICATIONS ON COLD COAL TAR COATINGS FROM FAIRBANKS MUNICIPAL WATER ANALYST. GREER TANK CO. ASSURES COMPLIANCE OF TARMASTIC WITH AWWA SPECIFICATIONS AND BROAD USEAGE IN GREER WATER TANKS. MUNICIPAL POWER PLANT WATER ANALYST AGREED TO RUN A SERIES OF TDS EVALUATIONS ON HIS TDS METER. DISCUSSION REGARDING THE CORROSION PROBLEMS IN THE WATER/STEAM CIRCUITS IN THE MUNICIPAL POWER PLANT.

01/1759Z AUG 72 GULA

31 JUL 72 17 35Z

ULA039B
RR GCEN GSTS
DE GULA 039B
31/1717Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SUMMARY OF WEEK BEGINNING 24 JULY 72
HOURS WORKED: 24 JULY - 9, 25 JULY - 12, 26 JULY - 13, 27 JULY - 9, 28 JULY - 9, 29 JULY - 9. OVERTIME 16 HOURS.
WORK ACCOMPLISHED:
NEW PLANT: CONTINUED TESTS AND CHEMICAL FEED ADJUSTMENTS IN ATTEMPT TO RAISE PH AND MOVE STABILITY INDEX NEARER TO 0.0.
MINITRACK PLANT: COMPLETED FLOOR SKETCHES AND TRIAL PLACEMENT OF EQUIPMENT. BEGAN CONSTRUCTION OF CHEMICAL FEED MANIFOLD OBTAINED AND MODIFIED NEW RECEIVER TANK, CONSTRUCTED SEDIMENT LEG OF OUR OWN DESIGN AND THE RECEIVER TANK STAND.
GILMORE PLANT: PARALLELED THE WORK ON MINITRACK PLUS LOADED THE IRON FILTERS.
GENERAL: INTERNAL SANDBLASTING AND CORROSION PROOF COATING OF THE GILMORE PRESSURE TANK. AUTO BACKWASH CONTROLS DELIVERY DATE IS AFFECTING COMPLETION DATE OF MINITRACK PLANT.

31/1725Z JUL 72 GULA

31 JUL 72 17 26Z

ULA037A
RR GCEN GSTS
DE GULA 037
31/1718Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY: 29 JULY 72
MINITRACK PLANT: MODIFICATIONS MADE TO THE NEW RECEIVER TANK STAND CONSTRUCTED FOR RECEIVER TANK. THE FINAL TEMPORARY LASHUP REQUIRED WAS MADE. ONE PLUMBER AT WORK.
GILMORE PLANT: FINISHED THE MODIFICATIONS TO THE NEW RECEIVER TANK STAND CONSTRUCTED FOR TANK. INTERIOR OF SANDBLASTED PRESSURE TANK WITH U.S. CHEMICALS TATMASTIC. WORKED ON INLET MANIFOLD FOR THE IRON FILTERS. ONE PLUMBER AND TWO HELPERS AT WORK.
NOTE: PLANT ENGINEER NOW ON LIMITED TRAINING PROGRAM TO ASSIST IN CONTINUED ECONOMICAL PRODUCTION OF GOOD WATER.

31/1724Z JUL 72 GULA

3|JUL72 0 0 Z|z

ULA0??3
RR G??N GSTS
DE C??A C09B
31/0??0Z
FM S??DIR/ULA
TO C??S/L BROWN CODE 822
INFO ?STS/R MOLLERICK CODE 822
GCEN/? THOMAS NS9

H. G??L SENDS;
SUBJ??T; ALASKA POTABLE WATER
FRID?Y 28 JULY 72
NEW ?LANT: STABILTIY INDEX VARING BETWEEN MINUS 0.2 AND MINUS 0.3. ~~THAT MAY~~ BE THE BEST THAT CAN BE ACHIEVED BECAUSE ADJUSTMENTS IN O?E CHEMICAL FEED NOW AFFECTS ANOTHER. THE SILICA IN THE WELL WATE? WILL PLAY A LARGE ROLE IN PROTECTING THE SYSTEM IF T?E S.I. IS MAINTAINED. SULFATES ARE HIGH BUT NOT IN DANGEROUS CONC?NTRATION RE: CORROSION. THE MAJORITY OF PROBLEMS IN POTABLE WATE? SYSTEMS ARE DUE TO CORROSION/SCALING AND MOST OF THE TIME IT I? CORROSION PRODUCTS THAT DEGRADE THE WATER.
MINI?RACK: PIPING LEVEL METER INTO PRESSURE TANK. ONE PLUMBER WORKED ONE ?ALF A DAY.
GILM?RE PLANT: LOADED THE FILTER MEDIA IN THREE REBUILT IRON FILT?RS. FROM BOTTOM TO TOP: GRAVEL - 16 QUARTS 1/2 TO 3/4 INCH, 5 QU?RTS 1/4 TO 1/2 INCH, 5 QUARTS OF 1/8 TO 1/4 INCH AND FINALLY 34 I?CHES OF GREENSAND. THIS IS ACCORDING TO PUBLISHED RESEARCH DATA. PREVIOUS BEDDING WAS 44 INCHES OF SODIUM ZEOLITE WHICH IS QUIT? SENSITIVE TO IRON FOULING. ONE PLUMBER AND ONE LABORER AT W?RK.
NOTE. TWO RECEIVER TANKS OBTAINED IN FAIRBANKS. THEY MUST BE MODI?IED SOMEWHAT. THE SECOND HELPER ARRIVED. STILL CHECKING INTO THE SAFETY MARGINS ON TARMASTIC TANK COATING.

31/0?00Z JUL 72 GULA

V
ULAØ33A
RR GSTS GCEN
DE GULA Ø38
28/1726Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS MSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
THURSDAY 27 JULY 72
NEW PLANT: STABILITY INDEX HOLDING AT MINUS Ø.2.
MINITRACK PLANT: CONTINUED WORK ON CHEMICAL FEED MANIFOLD AND
LOOP TO RECEIVER TANK. REPLACEMENT ~~FOR RECEIVER TANK NOT AVAILABLE~~
IN FAIRBANKS. AUTO CONTROLS FOR FE FILTERS HAVE NOT ARRIVED.
AVAILABILITY DATES ON CONTROLS AND RECEIVER TANK WILL IMPACT ON
COMPLETION DATE. MOUNTED THE HEALEY RUFF CONTROL FRAME ON WALL NEAR
PRESSURE TANK. OVERHAULED LEVEL CONTROL MECHANISM. ONE PLUMBER
AT WORK.
GILMORE PLANT: CLEANING & REBUILDING MANIFOLD VALVING FOR THE FE
FILTERS. FINAL CLEANING AND 12 HOUR DETOXIFICATION OF THE THREE
GRAVEL SIZES AND GLAUCONITE THAT MAKE UP THE IRON
FILTER MEDIA. AVAILABILITY DATE OF RECEIVER TANK WITH IMPACT
ON COMPLETION DATE.
ONE PLUMBER AND ONE HELPER AT WORK.
NOTES: DISCUSSIONS OF TRAINING PROGRAM FOR TREATMENT PLANT PERSONNEL
HAVE BEEN HELD.
DISCUSSION OF COSMETICS AND SANITARY APPEARANCE OF THE PLANTS
STARTED.

28/1733Z JUL 72 GULA

27 JUL 72 20 44Z

V
ULA060A
RR GSTS GCEN
DE GULA 060
27/2035Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
WEDNESDAY 26 JULY 72
NEW PLANT: STABILITY INDEX TODAY IS MINUS 0.2.
MINITRACK PLANT: POSITIONED EQUIPMENT TO CHEÇK CLEARANCES. CONSTRUCTED STAND AND RAN PIPING TO THE RECEIVER TANK POSITION. RECEIVER TANK IS IN VERY MARGINAL CONDITION WITH ZINC LINING COMPLETELY DISAPATED. REPLACEMENT POSSIBILITY BEING CHECKED. PRESSURE/LEVEL CONTROLS REMOVED FROM WALL FOR OVERHAULING. AUTO CONTROLS FOR FE FILTERS NOT SHIPPED AS YET. ONE PLUMBER AT WORK.
GILMORE PLANT: CONTINUATION OF THE CHEMICAL FEED PIPING MANIFOLD TO RECEIVER TANK. RECEIVER TANK CANNOT BE REUSED. TWO CUBIC FEET OF CORROSION PRODUCTS INSIDE AND ADVANCED CORROSION OF THE INTERIOR. REPLACEMENT POSSIBILITY BEING CHECKED. ONE PLUMBER AND ONE HELPER AT WORK.

27/2040Z JUL 72 GULA

V
ULA0463
RR GSTS
DE GULA Ø463
26/1957Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
TUESDAY 25 JULY 1972
MINITRACK PLANT: CONTINUED WORK ON ERECTION OF MODIFIED PLANT.
LOOP ERECTED FOR THREE CHEMICAL FEEDERS, WALLS PAINTED,
PLANS FINALIZED FOR REPOSITIONING PRESSURE/LEVEL CONTROLLER
FOR THE PRESSURE TANK. ONE PLUMBER AT WORK.
GILMORE PLANT: EQUIPMENT FOR MODIFICATION MOVED TO GILMORE.
NEW 'BY PASS' TO CLEAR WORK AREA MADE. WORK STARTED
TO REMOVE OLD RECEIVER TANK AND ON THE CHEMICAL INJECTION
LINE. ONE PLUMBER AND ONE HELPER AT WORK.
NOTE: CHECKING INTO SAFETY FACTORS OF TARMASTIC INTERNAL TANK
COATING.

26/2007Z JUL 72 GULA

25 Jul 72 18 14Z

ULA048B
RR GSTS GCEN
DE GULA 248B
25/1754Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY 24 JULY 72
NEW PLANT: MINIMUM CHANGE IN NAOH FEED RATE TO RAISE PH BY 0.1.
MINITRACK PLANT: BY PASS TO WASHROOMS RELOCATED TO CLEAR TOTAL AREA FOR THE MODIFICATIONS. SUMP PUMP LINE TESTED O.K. SEDIMENT LEG BUILT FOR RECEIVER TANK. ONE PLUMBER AND HELPER WORKING HERE.
GILMORE PLANT: PRESSURE TANK DRIED OUT AND SENT TO FAIRBANKS FOR SANDBLASTING BACKWASH PUMP DESIGNATED AND TESTED O.K. PRELIMARY FLOOR SKETCHES MADE FOR EQUIPMENT LOCATION. MR. TOURVILLE BRIEFED ON THE NEW LAYOUT. ONE PLUMBER WORKING ON THIS PLANT.

25/1802Z JUL 72 GULA

24 JUL 72 17 37z

ULA 05 0B
RR GCEN GSTS
DE GULA 05 0B
24/1727Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS/NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SUMMARY OF WEEK BEGINNING 17 JULY 72
HOURS WORKED: 17 JULY-13, 18 JULY - 12, 19 JULY-12, 20, 21 AND 22
JULY -9. OVERTIME - 23 HOURS.
WORK ACCOMPLISHED:
NEW PLANT: ALL MAJOR WORK COMPLETED. ENGINEERING GUIDELINES POSTED
IN PLANT.
MINITRACK PLANT:
BACKWASH SYSTEM TO DRY WELL COMPLETED. FLOOR SKETCHES FOR MODIFIED
PLANT LAYOUT.
GILMORE PLANT:
DESIGN FOR MODIFIED PLANT COMPLETED. OLD PLANT COMPLETELY
DISMANTLED AND EQUIPMENT OVERHAULED.
GENERAL:
FILTER GRAVEL SIZED, STABILITY TESTS CONTINUED, PROCUREMENT ACTIONS.

24/1735Z JUL 72 GULA

24/1 ... 3Z

ULA047A
RR GCEN GSTS
DE GULA 047
24/1726Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
SATURDAY 22 JULY 1972
MINITRACK PLANT: PIPING TO SUMP PUMP COMPLETED. PRELIMINARY FLOOR MEASUREMENTS & SKETCHES FOR EQUIPMENT PLACEMENT COMPLETED.
GILMORE PLANT: SECOND CHEMICAL TEST SERIES ON WELL WATER COMPLETED. MINUS 2.4 STABILITY INDEX INDICATES WATER IS VERY CORROSIVE. IRON FILTERS WERE OPENED AND FLUSHED. THEY WERE EXTREMELY DIRTY AND ENCRUSTED WITH LARGE CORROSION TUBERCLES. THESE FILTERS ARE NOT NEEDED. THEY SHOULD BE OVERHAULED LATER. HAVE NOT LOCATED FIRM TO SAND BLAST THE PRESSURE TANK. THIS COULD BECOME A MAJOR PROBLEM REQUIREING A NEW TANK.
NOTES: TWO THIRDS OF GRAVEL NEEDED FOR FE FILTER BEDS SCREENED BY LABORER NOW WORKING WITH US. THE PORTABLE LABORATORY HAS BEEN A KEY FACTOR IN THE WORK HERE.

24/1748Z JUL 72 GULA

23 JUL 72 15 25z

ULA028B
RR GCEN GSTS
DE GULA 028B
23/15 12Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
FRIDAY 21 JUL 1972
MINITRACK PLANT: THE CONCRETE FOR THE SUMP WAS POURED.
GILMORE PLANT: OVERHAULING SOFTENERS AND PRESSURE TANK. CORROSION PRODUCTS HAVE SOLIDILY PLUGGED THE PIPING AND CONTROLS ON THE SOFTENER. INTERIOR OF PRESSURE TANK IS ENCRUSTED WITH LARGE CORROSION TUBERCLES. ATTEMPTS TO LOCATE FIRM TO SANDBLAST AND RELINE THE TANK WAS UNSUCCESSFUL TODAY. TANK IS FIRM. PRESSURE TESTED TODAY AT 90 PSI.
QUESTION FOR MR E. C. THOMAS: HAS COMPUTER PROGRAM FOR CETA BEEN COMPLETED AND TESTED?

23/1521Z JUL 72 GULA

21[illegible] 32

ULA053A
RR GCEN GSTS
DE GULA 053
21/2133Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
THURSDAY 20 JULY 1972
NEW PLANT: ALL ENGINEERING DATA REGARDING MINIMUM/MAXIMUM CHEMICAL LEVELS, FEED CONCENTRATIONS, RATES AND BACKWASHING POSTED IN PLANT IN THREE QUARTER INCH LETTERS. DETAILS WILL BE INCLUDED IN FINAL REPORT STABILITY INDEX HOLDING AT MINUS 0.2. WILL CONTINUE TO MONITOR THE S.I. WITH THE EXCEPTION OF AUTO BACKWASH CONTROLS THE MAJOR WORK ON THIS PLANT IS COMPLETE. MINOR ITEMS REMAINING: SOLENOID VALVE FOR BYPASS LINE, PIPE COVERING, PAINTING ETC.
MINITRACK PLANT:
AWAITING CONCRETE POUR FOR SUMP.
GILMORE PLANT:
COMPLETELY DISASSEMBLED WITH EXCEPTION OF ONE PRESSURE TANK TO PROVIDE UNTREATED WELL WATER TO LAVATORIES. ALL EQUIPMENT & PIPING MOVED TO ALASKA BUILDING FOR COMPLETE OVERHAUL. COMPLETED DESIGN FOR THE MODIFICATION SENT TO DRAFTSMAN.

21/2142Z JUL 72 GULA

ULA005A
RR GSTS
DE GULA 005
21/0247Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R HUFFMAN CODE 822

PAGE ONE OF TWO
J. ROBINSON SENDS:
REF SCAMACON THIS DATE WITH R. HUFFMAN ON WATER TREATMENT ACTIVITIES.
BECAUSE OF THE NEED TO VERIFY PLANT OPERATION AND MAKE FINAL
ADJUSTMENTS AFTER COMPLETION OF PIPING IT IS NOT FEASIBLE TO DRAW UP
INSTRUCTIONS FOR COMPLETION OF THIS ACTIVITY AND TO HAVE UNTRAINED
PERSONNEL SUPERVISE BALANCE OF WORK. ALSO CLEANING OF GENERATOR HEAT
EXCHANGER SYSTEM REQUIRES REAL TIME MONITORING OF SOLUTION
CONCENTRATIONS DURING TEST TO INSURE AGAINST SYSTEM DAMAGE. THESE
TESTS REQUIRE AN EXPERIENCED TECHNICIAN NOT AVAILABLE AT SITE.
FOR THESE REASONS, RECOMMEND SCHEDULE OUTLINED PREVIOUSLY BE RETAINED
WITH ALL WORK TO BE COMPLETED BY 13 AUGUST 72. IN ORDER TO MEET
THIS DATE AND TO AVOID SLIP SITE PERSONNEL SUPPORT WILL BE REQUIRED
DURING THIS PERIOD:
1. ELECTRICIAN TO REWIRE PLANT MOTORS AND CONTROLS. ESTIMATE EIGHT
MAN DAYS OVER FOUR WEEKS. WORK CAN BE DONE AFTER NORMAL SHIFT.
2. TWO OF THREE LABORERS FOR MOVING TANKS, REACHARGING FILTERS AND
SOFTENERS, PARTS PROCUREMENT RUNS.
3. SITE PICK UP TRUCK USE ON A FULL TIME BASIS
THE MAIN POINT TO BE KEPT IN CONSIDERATION IN DECIDING ON THE
METHOD FOR COMPLETING THIS TASK IS THAT NO FIRM PLANS FOR THE

PAGE TWO OF TWO GULA 21/0047Z
REWORK EXIST AND THAT ON SITE DAY TO DAY SUPERVISION AND TESTING IS
NECESSARY. THE STATION DIRECTOR HAS EXPRESSED HIS OPINION THAT THE
WORK SHOULD BE COMPLETED UNDER SUPERVISION. PLEASE ADVISE BY TWX SO
THAT PLANS CAN BE MADE TO SCHEDULE REQUIRED SUPPORT FOR NEXT WEEK.
WILL SCAMA AM ON 21 JULY 72 FOR DISCUSSION.

21/0110Z JUL 72 GULA

TM

ULA 049B
RR GCEN GSTS
DE GULA 049B
20/2154Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. CALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY 19 JULY 1972
NEW PLANT: RAN A WIDE RANGE OF TESTS ON THE 'SOFTENER "BY PASS"
VALVE TO PREDETERMINE SETTINGS FOR THE ALASKA OPERATING CREW.
ATTAINED A WATER STABILITY INDEX OF MINUS 0.2. FINALLY MADE CONTACT
WITH PERMUTIT REGARDING AUTO BACKWASH CONTROLS.
MINITRACK PLANT: BACKWASH SUMP NOW READY FOR CONCRETE POUR.
GILMORE PLANT: CONTINUED THE DISMANTLING. OVERHAULED ONE 250
GALLON TANK. ITT CONTAINED 10 INCHES OF CORROSION SLUDGE AT THE
BOTTOM. THIS RESULTED FROM THE MINUS 2.6 WATER STABILITY INDEX.
GENERAL: DISCUSSION WITH MR EISLE & ROBINSON CONCERNING THE
CHEMICAL CLEANING OF A DIESEL COOLING SYSTEM.

20/2204Z JUL 72 GULA

19 JUL 72 17 40Z

ULA042A
RR GCEN GSTS
DE GULA 042
19/1732Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER:
TUESDAY 18 JULY 1972
NEW PLANT: STABILITY INDEX OF TREATED WATER NOW AT MINUS 0.6.
OTHER VITAL LEVELS AS FOLLOWS: FE EQUALS 0.1 PPM,
MN EQUALS 0.5 PPM AND CHLORINE AT 0.3 PPM. TESTS ARE MADE AFTER ALL
TREATMENT CHEMICALS HAVE REACTED.
MINITRACK PLANT: STILL WORKING ON BACKWASH SUMP.
GILMORE PLANT: BEGAN DISASSEMBLY. LARGE PRESSURE AND HOLDING TANKS
WHICH LOOK GOOD ON THE OUTSIDE ARE VERY CORRODED INSIDE. WELL
WATER HAS STABILITY INDEX OF MINUS 2.6 WHICH IS VERY CORROSIVE.
THIS ACCOUNTS FOR THE TOTAL DESTRUCTION OF THE WELL RISER PIPE
WHICH WAS REPLACED SEVERAL WEEKS AGO.

19/1736Z JUL 72 GULA

HERB GALL

18 JUL 72 00 57Z

GULØ03B
RR GULA
DE GSTS Ø42
17/1745Z
FM LARRY E BROWN CODE 822
TO GULA/STADIR/J ROBINSON

SUBJ: 500KW DIESEL - GENERATOR
REF: UR 13/Ø114Z JUL, ITEM 2
WITH ITEM AND OPERATIONAL DEMANDS PERMITTING, CHEMICALLY CLEAN
AND TREAT ONE (1) DIESEL COOLING SYSTEM (SUBJECT ITEM) IN
ACCORDANCE WITH OUR DISCUSSION WITH H. GALL, PER FS-PPEB--23
THE FOLLOWING DATA IS REQUESTED:
A. PRIOR TO CLEANING, RECORD:
1. ENGINE JACKET TEMPERATURE AT 1/2, 3/4, FULL LOAD
2. COOLANT FLOW RATE, GPM
3. INLET AND OUTLET AIR TEMPERATURE AT RADIATOR
B. AFTER CLEANING & TREATMENT RECORD:
SAME THREE STEPS AS ABOVE.
C. IF BOTH THE HEAT EXCHANGER AND RADIATOR ARE CLEANED, SEPERATE
TEMPERATURES ARE TO BE TAKEN ACROSS EACH CIRCUIT BEFORE AND
AFTER CLEANING.

18/ØØ5ØZ JUL 72 GSTS

[illegible]

#T
ULA 034B
RR GCEN GSTS
DE GULA 034B
18/1805Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY 17 JULY 1972
MINITRACK PLANT: EXCAVATION FOR THE BACKWASH SUMP HAS BECOME COMPLICATED AS UNCHARTED OBSTACLES AND BURIED LINES ARE ENCOUNTERED.
GILMORE PLANT: COMPLETED THE INITIAL TESTING OF THE WELL AND EXISTING PLANT WATER. NOW READY TO DISMANTLE.
GENERAL: A SOURCE OF GRAVEL FOR THE FILTER BEDS HAS BEEN LOCATED.
TEST EQUIPMENT: THE HYDROMETER METHOD TO DETERMINE TOTAL DISSOLVED SOLIDS IS QUITE UNRELIABLE BELOW 2000 PPM. THE TDS LEVELS HERE APPEAR TO BE AVERAGING BETWEEN 800 & 1000 PPM. TDS IS VITAL TO DETERMINE THE STABILITY OF THE WATER AS FORMULATED BY LANGELIER AND USED BY THE AMERICAN WATER WORKS ASSOCIATION. REQUEST YOU CONSIDER A TDS METER FOR THE PORTABLE LABORATORY.

18/1817Z JUL 72 GULA

17 JUL 72 1 , 3 2z

ULA031B
RR GCEN GSTS
DE GULA 031B
17/1814Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SUMMARY OF WEEK BEGINNING 10 JULY 1972:
HOURS WORKED: 10, 12, 13, & 14 JULY 9 HOURS PER DAY. 11 JULY 12 HOURS AND 15 JULY 14 HOURS. OVERTIME 17 HOURS. WORK ACCOMPLISHED:
NEW PLANT: COMPLETED CHANGES ON CHEMICAL CONCENTRATIONS AND FEED RATES. CHEMICAL TESTS. RELOCATED THE WATER METER.
MINITRACK PLANT: 90 PER CENT OF BACKWASH DISPOSAL SYSTEM INSTALLED.
GILMORE PLANT: DETAILED SCHEMATIC OF THE PRESENT PLANT AND OPERATION. 75 PER CENT OF INITIAL TESTS ON WELL AND TREATMENT PLANT.
GENERAL: PROCUREMENT RESEARCH ON AUTOMATIC EQUIPMENT, BITS AND PIECES FOR THE GILMORE AND MINITRACK MODIFICATIONS.

17/1827Z JUL 72 GULA

17JUL72 18 12Z

ULA036A
RR GCEN GSTS
DE GULA 036
17/1812Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY: 15 JULY 1972
NEW PLANT: REPOSITIONED THE WATER METER TO PERMIT OBSERVATIONS AND TO RECORD ALL WATER PROCESSED BY THE PLANT.
MINITRACK PLANT: FINALLY REMOVED A 34 INCH DIAMETER SLAB FROM THE 6 INCH REINFORCED CONCRETE FLOOR FOR THE BACKWASH EFFLUENT SUMP. THE SUMP PUMP ARRIVED.
GILMORE PLANT: CONTINUED THE INITIAL TESTING ON THE WELL AND TREATMENT PLANT.

17/1817Z JUL 72 GULA

17 JUL 72 1820z

ULA035A
RR GCEN GSTS
DE GULA 035
17/1809Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
FRIDAY 14 JULY 1972
NEW PLANT: WATER METER POSITIONED WHERE IT CANNOT BE READ ONCE A PROGRAMMED WALL IS BUILT AND IT DOES NOT RECORD ALL WATER PROCESSED. DESIGN COMPLETED ON REPOSITIONING THE METER. ALL MAJOR CHANGES ON CHEMICAL FEEDS COMPLETED.
MINITRACK: PREPARING FIFTY GALLON CAPACITY SUMP IN FLOOR FOR BACKWASH COLLECTION POINT.
GILMORE: RUNNING TOTAL TEST SERIES ON PLANT BEFORE DISMANTLING.

17/1811Z JUL 72 GULA

14 JUL 72 1754z

ULA 0468
RR GSTS GCEN
DE GULA 0468
14/1738Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
THURSDAY 13 JULY 1972
NEW PLANT: CHANGES IN CHLORINE AND CAUSTIC SODA CONCENTRATIONS AND INJECTION RATES IN ORDER TO ACHIEVE A BETTER OPERATION CONTROL PROFILE. VERY HIGH CONCENTRATIONS OF CHEMICALS AND VERY LOW FEED RATES ON THE OVERSIZED INJECTION PUMPS AS ORIGINALLY PROGRAMMED PUTS THE PUMPS IN A VERY POOR OPERATING RANGE AND ALLOWS THE CHEMICALS TO DEGRADE FROM LONG EXPOSURE. AFTER EACH CHANGE A SERIES OF TESTS ARE NECESSARY TO DETERMINE STABILITY OF THE WATER.
MINITRACK PLANT: CONTINUED WORK ON BACKWASH EFFLUENT DISPOSAL SYSTEM: COMPLETED CLEANING AND REBUILDING THE LARGE SOFTENER AND THE AUTO HYDRAULIC BACKWASH AND REGENERATION CONTROLS OF SAME.

14/1751Z JUL 72 GULA

13 JUL [illegible]

ULA 037B
RR GSTS GCEN
DE GULA 037B
13/1849Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 802
INFO GSTS/R HOLLERICK CODE 822
GCEN/E THOMAS HSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY 12 JULY 1972
MINITRACK PLANT: CLEANING & REBUILDING THE SOFTENER
AND AUTO TIMED HYDRAULIC CONTROLS. ~~WILL NOT ATTEMPT TO~~
SAVE SODIUM ZEOLITE FILTER MEDIA-TOO MANY MAN HOURS
INVOLVED. PLUMBING WORK ON BACKWASH DISPOSAL SYSTEM
50 PERCENT COMPLETE. WATER METER ORDERED FOR THE SYSTEM.
GILMORE PLANT:
MEETING WITH MR. EISLE, ROBINSON AND TOURVILLE ON WORK REQUIRED
AT GILMORE. SURVEY OF PRESENT FLOW SYSTEM AND OPERATING
PROBLEMS COMPLETED. DRAFT OF SCHEMATIC SENT TO DRAFTING.
NOTE:
THE CHEMICALS FOR CLEANING A DIESEL COOLING SYSTEM ARRIVED.

13/1854Z JUL 72 GULA

12JUL72 13 30Z

ULA062B
RR GSTS GCEN
DE GULA 062B
12/1816Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
TUESDAY 11 JULY 72
NEW PLANT: SOFTENER 'BY PASS' AND CHLORINE FEED ADJUSTMENTS AND TESTS CONTINUED.
MINITRACK PLANT: PLANS COMPLETED ON A SYSTEM TO DISCHARGE BACKWASH EFFLUENT INTO DRY WELL INSTEAD OF SANITARY SEWER. CHEMICAL FEED PUMPS BEING FLUSHED AND TESTED. AUTO BACKWASH TIMER CONTROLS ORDERED FOR THE THREE OSHKOSH FILTERS.
GILMORE PLANT: SURVEY OF DEFICIENCIES CONTINUES. CLEANING AND OVERHAULING LINDSAY FE FILTERS AND CONTROLS FOR INSTALLATION AT GILMORE.

12/1822Z JUL 72 GULA

12 JUL 72 11 07 Z

ULA033A
RR GCEN GSTS
DE GULA 033
12/1057Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
MONDAY 10 JULY 1972.
MINITRACK PLANT: COMPLETED THE DISASSEMBLING. FE FILTERS ARE COMPLETELY JAMMED WITH THICK IRON SLIME. WASHING AND REGENERATING THIS FILTER MEDIA WOULD BE TOO EXPENSIVE. ALL PLANT PIPING AND CONTROLS REDUCED TO ONE HALF CAPACITY BY IRON SLIME; CLEANING SAME WILL ADD SEVERAL DAYS TO THE PROGRAM.
NEW PLANT: SOFTENER (BY PASS) PLOT NOW SHOWS WATER TO CONSUMER CARRYING 57 PPM CA AS CA CO3, MUST REDUCE TO APPROXIMATELY 30 PPM. CHEMICAL DOSAGE ON CA(C10)2 CHANGED TO 3 POUNDS PER 50 GALLONS OF TREATMENT WATER. INJECTION RATE DOUBLED TO REACH EFFECTIVE PUMP OUTPUT.
GILMORE PLANT: STARTED INITIAL SURVEY TO DETERMINE EXACT MODIFICATIONS NECESSARY.

12/1105Z JUL 72 GULA

10JUL72 1732Z

ULA037B
RR GSTS GCEN
DE GULA 037B
10/1728Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SUMMARY FOR WEEK BEGINING 3 JULY 72
TIME WORKED 62 HOURS: JULY 4-8HOURS, JULY 8-9 HOURS JULY 6-13 HOURS. JULY 3, 5, 7-9 HOURS PER DAY, WORK ACCOMPLISHED: DAILY BALANCE TESTS ON NEW PLANT, DESIGN OF TREATED WATER BACKWASH FOR MINITRACK MODIFICATION, INSTALLATION OF SOFTENER 'BY PASS' ON NEW TREATMENT PLANT, REGENERATION OF CONTAMINATED GREENS AND PARTIAL DISMANTLING OF MINITRACK TREATMENT PLANT.

10/1732Z JUL 72 GULA

10 JUL 72 17 31 Z

V
ULA035A
RR GCEN GSTS
DE GULA 035
10/1721Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SATURDAY 8 JULY 1972
ONE PLUMBER AT WORK TODAY. BEGAN THE PLOT ON THE NEW PLANT
~~SOFTENER BY PASS~~ SETTINGS. CONTINUED REGENERATION OF GREENSAND.
FINISHED THE TEMPORARY LASHUP TO BYPASS THE MINITRACK
TREATMENT PLANT. BEGAN TO DISASSEMBLE THE MINITRACK PLANT.

10/1730Z JUL 72 GULA

10JUL72 17 27z

ULA036B
RR GSTS GCEN
DE GULA 036B
10/1713Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/R MOLLERICK CODE 822
GCEN/E THOMAS NSG

H. GALL SENDS
SUBJECT: ALASKA POTABLE WATER
FRIDAY-8 JULY 1972
MINITRACK WELL FE CONTENT HOLDING AT 17 PPM. WILL CHECK INTO POSSIBILITY OF SEALING PERFORATIONS IN CASING IN ATTEMPT TO REDUCE THE HIGH FE. ARRANGING TEMPORARY TANK AND PIPING TO 'BY PASS' MINITRACK TREATMENT PLANT IN ORDER TO DISMANTLE AND MODIFY IT, BALANCE TESTS RAN ON NEW TREATMENT PLANT, IRON AND MANGANESE IN NEW PLANT EFFLUENT HOLDING RESPECTIVELY AT 0.1 PPM AND 0.05 PPM WHICH IS EXCELLENT.

10/1722Z JUL 72 GULA

7 JUL 72 ... Z

ULA Ø1ØB
RR GSTS GCEN
DE GULA Ø1ØB
Ø7/Ø234Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO GSTS R MOLLERICK CODE 822
GCEN E THOMAS NSG

H GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
THURSDAY 7 JULY 1972
ADJUSTABLE BY PASS AROUND SOFTENER AND ONE ADDITIONAL SAMPLE POINT INSTALLED IN NEW TREATMENT PLANT. AS BUILT SCHEMATIC OF NEW PLANT COMPLETED. DAILY BALANCE TESTS RAN ON NEW PLANT. THE PLANS FOR AUTOMATING AND CONFIGURING THE MINITRACK PLANT FOR TREATED BACKWASH CAPABILITY ARE READY FOR DRAFTING. THE THREE FILTERS TWO PUMPS, AND TWO TANKS NEEDED FOR MINITRACK MODIFICATION ARE AVAILABLE ON THE STATION. THERE IS A REQUIREMENT FOR AUTOMATIC BACKWASH CONTROLS.

Ø7/Ø349Z JUL 72 GULA

6 JUL 72 1 . 3 3 Z

ULA052B
RR GSTS
DE GULA 052B
06/1936Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822 E THOMAS NSG

H GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
WEDNESDAY 5 JULY 1972
THE MANUFACTURER OF THE FE FILTER IN THE NEW PLANT SUGGESTED BACKWASHING AFTER EVERY 30,000 GALLONS OF FLOW THROUGH THE FILTER BUT THE BALANCE TESTS BEGAN TO SHOW FILTER MEDIA PENETRATION. TODAYS FIRST BACKWASHING AT 24,000 GALLONS PROVED THIS. CALCULATIONS INDICATE BACKWASHING AT 16,000 GALLONS WOULD PREVENT PENETRATION. WILL BACKWASH TEST AGAIN AT 40,000 GALLONS. CONTINUED THE CLEANING AND PRELIMINARY REGENERATION OF CONTAMINATED GREEN SAND FROM THE OLD PLANT. DESIGNING TREATED WATER BACKWASH CAPABILITY FOR THE MINITRACK MODIFICATION.

06/1944Z JUL 72 GULA

2-NAS
STAM
FAC
T.R-
#2 NASA
x STAM

6 JUL 72 22 50Z
6 JUL 72 22 39Z

GSTS READDRESS
TO GCEN

G L148A
RR GCEN GULA
DE GSTS 1162
GCEN/E THOMAS WSO
INFO GULA

RR GSTS
DE GULA 0520
05/1900Z
FM STADIR/ULA
TO L BROWN CODE GIWS
INFO R MOLLERICK CODE 622 GCEN E THOMAS WSO

X, Fac

H GALL SENDS;
SUBJECT, ALASKA POTABLE WATER
WEDNESDAY JULY 1972
THE MANUFACTURER OF THE FE FILTER IN THE NEW PLANT SUGGESTED
BACKWASHING AFTER EVERY 30,000 GALLONS OF FLOW THROUGH THE
FILTER BUT THE BALANCE TESTS BEGAN TO SHOW FILTER MEDIA PENETRATION.
TODAYS FIRST BACKWASHING AT 24,000 GALLONS PROVED THIS. CALCULATIONS
INDICATE BACKWASHING AT 16,000 GALLONS WOULD PREVENT PENETRATION.
WILL BACKWASH TEST AGAIN AT 40,000 GALLONS. CONTINUED THE
CLEANING AND PRELIMINARY REGENERATION OF CONTAMINATED GREEN
SAND FROM THE OLD PLANT. DESIGNING TREATED WATER BACKWASH
CAPABILITY FOR THE MINITRACK MODIFICATION.

05/1944Z JUL 72 GULA

5 JUL 72 20 48z

ULA 052B
RR GSTS
DE GULA 052B
05/1750Z
FM GULA/STADIR
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822 E THOMAS NSG

H GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
TUESDAY 4 JULY 1972
DAILY BALANCE TESTS MADE ON NEW PLANT. ONE. CRACKED BRASS UNION ON NAOH FEED LINE CREATED PROBLEM FOR SHORT LINE. ATTACK ON ALUMINUM WAS SEVERE. WORKED OUT CLEAN UP AND TEMPORARY FIX. RAN SEVERAL CONFIRMATION TESTS ON FE & MN FROM MINITRACK WELL. FE AVERAGES 17.0 PPM, MN IS 2.0 PPM. SINCE 3.0 PPM OF FE CAN BE TROUBLE FOR FILTERS IT SHOWS THE MODIFIED MINITRACK PLANT WILL HAVE TO BE AUTOMATED TO THE MAXIMUM EXTENT. AUTO CONTROLS FOR BACKWASHING THE 3 REBUILT DIAMOND MG-20 IRON FILTERS ARE A MUST. LAID OUT SCHEDULE FOR THE TWO TEMPORARY HIRES.

05/2035Z JUL 72 GULA

5 JUL 72 20 13z

ULA05 1B
RR GSTS
DE GULA 05 1B
05/1956Z
FM GULA/STADIR
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822 E THOMAS NSG

H GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
MONDAY 3 JULY 1972
COMPLETED THE INITIAL TEST SERIES ON THE MINITRACK WELL AND TREATMENT PLANT. RAN DAILY BALANCE TESTS ON NEW PLANT. TWO TEMPORARY HIRES BEGAN WORK AT 12:00 NOON TODAY. WORKED ON GREEN SAND AND IRON FILTER UNITS FROM THE DISMANTLED PLANT. AS SOON AS A TEMPORARY PRESSURE TANK IS MOVED INTO THE MINITRACK BUILDING THE TREATMENT PLANT WILL BE DISMANTLED FOR RENOVATING AND DESIGN CHANGES.

05/2003Z JUL 72 GULA

3 JUL 72 17 47z

ULA034B
RR GSTS
DE GULA 034B
03/1742Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
MONDAY 3 JULY 1972
SUMMARY WEEK OF 26 JUNE 72. TIME WORKED 60 HOURS: 3 HOURS WEDNESDAY, 4 THURSDAY AND 5 SATURDAY ON COOLING CIRCUIT CORROSION- REPORT TO BE SUBMITTED. 8 HOURS SUNDAY, 2 JULY ON CHEMICAL TESTING. COMPLETED INITIAL TESTS ON NEW TREATMENT PLANT AND BEGAN THE DAILY TEST SERIES FOR BALANCING THIS PLANT. STARTED THE INITIAL TEST SERIES ON THE MINITRACK WELL AND PLANT. LABORATORY IS NOW 95 PERCENT COMPLETE AND FUNCTIONING PROPERLY.

03/1744Z JUL 72 GULA

3 JUL 72 17 0Z

ULA033B
RR GSTS
DE GULA 033B
03/1736Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
SUNDAY 2 JULY 1972
RAN THE DAILY BALANCE TEST SERIES ON THE NEW TREATMENT PLANT AND ABOUT ONE THIRD OF THE TESTS ON THE MINITRACK WELL AND WATER TREATMENT PLANT. TITRATION END POINT FOR CARBONIC ACID ON CO2 TESTS IS VERY INDISTINCT. AVERAGE OF THREE CONTROLLED TESTS IS USED AS PPM OF RECORD FOR FREE CO2 AS CO2.

03/1738Z JUL 72 GULA

3JUL72 17 50Z

#V
ULA035A
RR GSTS
DE GULA 035
03/1743Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
FRIDAY 30 JUNE 1972
COMPLETED THE ENTIRE INITIAL SERIES OF CHEMICAL TESTS AND CHECKS ON THE NEW TREATMENT PLANT. ONE DISTURBING FACTOR IS 200 PPM OF SULFATES WHICH SHOWED UP ON FOUR INDEPENDENT TESTS. A DAILY TEST NOW UNDERWAY OF THE CACO3 HARDNESS, PH, FE AND ALKALINITY LEVELS WILL INDICATE THE DEGRADATION RATE OF THE PLANT AND PROVIDE THE DATA TO BALANCE THE CHEMICAL TREATMENTS BACKWASHES AND REGENERATION CYCLES. PLEASE NOTE THE NEW PLANT IS PROVIDED WITH MANUAL BACKWASH AND REGENERATION CONTROLS. AUTO TIMED CONTROLS FOR THESE FUNCTIONS ARE A MUST TO REGULARLY SCHEDULE THESE FUNCTIONS IN LOW LOAD PERIODS AND TO SAVE UP TO 8 MANHOURS PER WEEK. BEGAN THE INITIAL TEST SERIES ON MINITRACK TODAY.
THE LABORATORY WITH THE EXCEPTION OF ZINC TEST CAPABILITY WAS COMPLETED TODAY WITH THE ARRIVAL OF THE AUTO LEVELING BURETTES.

03/1747Z JUL 72 GULA

ULA Ø34B
RR GSTS
DE GULA Ø34B
3Ø/1733Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
THURSDAY 29 JUNE 1972. INITIAL TESTS ON WATER CHEMISTRY OF NEW TREATMENT PLANT AND OLD ALASKA WELL WILL BE COMPLETED TOMORROW.
WORK PRIORITIES ARE AS FOLLOWS:

1. WASH CONTAMINATED GREENSAND FILTERING MEDIA.
2. INSTALL ADJUSTABLE BYPASS AROUND SOFTENER IN NEW PLANT.
3. OVERHAUL FILTERS AND SOFTENERS OF DISMANTLED PLANT.
4. CLEAN AND CALIBRATE AUTO TIMING DEVICES AND PUMPS FROM DISMANTLED PLANT.
5. BYPASS MINITRACK TREATMENT PLANT.
6. RIG BACKWASH DRAIN TO DRY WELL OF MINITRACK.
7. DISMANTLE MINITRACK PLANT AS NECESSARY TO EFFECT DESIGN CHANGES. RIG SURFACE AND BOTTOM BLOW DOWNS IN RECEIVER TANK. INSTALL SAMPLING TAPS. CALIBRATE WATER METER. INSTALL REBUILT IRON FILTERS. RIG BYPASS AROUND SOFTENER. RIG C1, NA2CO3 AND KMNO4 CHEMICAL FEEDERS TO DISCHARGE INTO RECEIVER TANK INTAKE. CHECK AND SET AUTO DEVICES ON BACKWASHES AND CHEMICAL FEEDERS. CHLORINATE TO DETOXIFY. PUT PLANT ON THE LINE. CHEMICAL TEST AND BALANCE.
8. MOVE TO GILMORE PLANT FOR THE NECESSARY TESTS AND MODIFICATIONS.
9. CONTINUE TO RUN THE BALANCING TESTS ON THE NEW TREATMENT PLANT IN ORDER TO DETAIL OPERATIONAL PROCEDURES.

3Ø/1741Z JUN 72 GULA

29[illegible]8Z

ULA044A
RR GSTS
DE GULA Ø44
29/1812Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
WEDNESDAY 28 JUNE 1972
FULL DAY OF CHEMICAL TESTS ON THE NEW TREATMENT PLANT. TO DATE 14,ØØØ GALLONS OF WATER HAVE BEEN PROCESSED. IRON FILTER HELD FE CONTENT AT Ø.3 PPM WHICH IS THE HIGHEST ACCEPTABLE LIMIT. SOFTENER CAPACITY DEGRADED FROM Ø PPM CA CO3 HARDNESS TO 19Ø PPM HARDNESS ON A 25Ø PPM INPUT FROM WELL. AFTER THE REGENERATION TODAY THE SOFTENER OUTPUT RETURNED TO Ø PPM HARDNESS. UNDER ALASKA CONDITIONS Ø PPM AND VERY LOW HARDNESS IN EFFLUENT IS VERY CORROSIVE. WE WILL INSTALL AN ADJUSTABLE BYPASS AROUND THE SOFTENER AND REGULATE HARDNESS FROM A REGENERATION LOW OF 5Ø PPM TO A HIGH OF 8Ø PPM BEFORE THE NEXT REGENERATION. THIS WILL ALSO LIGHTEN THE LOAD ON THE SOFTENER. THE NEW CHEMICAL FEEDERS ARE OVERSIZED FOR THEIR WORK LOAD AND CREATE CHEMICAL FEEDING PROBLEMS.

29/1816Z JUN 72 GULA

29 JUN 72 01 00z

ULA005A
RR 3STS
DE GULA 005
29/0055Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS;
SUBJECT: ALASKA POTABLE WATER
TUESDAY 27 JUNE 1972
THE STATION PHOTOGRAPHER TOOK A SERIES OF PICTURES TODAY FOR MY REPORT ON THE TREATMENT PLANTS. THE LABORATORY IS ABOUT 90 PERCENT COMPLETE NOW. LACK OF A SUFFICIENT NUMBER OF SELF LEVELING BURETTES TRIPLE THE TIME ON TESTING PROCEDURES. THE FIRST TEST SERIES ON THE NEW TREATMENT PLANT ARE NOW UNDERWAY. CONTINUED EXPERIMENTAL WASHING OF SPECIMENS OF CONTAMINATED GREEN SAND.

29/0101Z JUN 72 GULA

27 JUN 72 19 10Z

ULA035A
RR GSTS
DE GULA 035
27/1904Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
MONDAY 26 JUNE 72
CONTINUING TO EXPERIMENT WITH CLEANING PROCEDURES FOR GREENSAND. RAN TOTAL IRON TEST SERIES (24) ON NEW TREATMENT PLANT. WELL WATER HAS 1.4 PPM OF FE AND TAP WATER HAS 0.3 PPM OF FE. THE WATER IS VERY GOOD AND CAN REMAIN SO IF WELL IS NOT OVERPUMPED AND TREATMENT PLANT IS PERFORMING PROPERLY. WELL PIPE REMOVED FROM GILMOR WELL TODAY SHOWS EXTREMELY AGGRESIVE CORROSION FORCES AT WORK. WILL CHECK INTO THIS WHEN THE GILMOR PLANT IS MODIFIED.

27/1908Z JUN 72 GULA

27 JUN 72 1922Z

ULA034A
RR GSTS
DE GULA 034
27/1807Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO R MOLLERICK CODE 822/E THOMAS NSG

H. GALL SENDS;
SUBJECT; ALASKA POTABLE WATER
SUMMARY WEEK OF 19 JUNE 72
TIME WORKED 45 HOURS. 5 HOURS SUNDAY ON FILTER
STRATA AND CLEANING TECHNIQUES. ALL SAMPLING
POINTS NOW INSTALLED IN NEW TREATMENT PLANT.
LABORATORY NOW 80 PERCENT OPERATIONAL.
80 PERCENT OF ITEMS ON ORDER HAVE ARRIVED.
DISASSEMBLED DEFUNCT ALASKA TREATMENT PLANT AND BEGAN
PROGRAM TO CLEAN THE MANGANESE GREENSAND CHARGES
FOR THE FE FILTERS.

27/1810Z JUN 72 GULA

26 Jun 72 [illegible] 52z

ULA035A
RR GSTS
DE GULA 035
26/1930Z
FM STADIR/ULA
TO L BROWN CODE 322
INFO R MOLLERICK CODE 322/E THOMAS NSG

H GALL SENDS:
SUBJECT: ALASKA POTABLE WATER
FRIDAY 23 JUNE 1972
THIS MORNING WE BEGAN THE MANGANESE GREEN SAND CLEANING
PROGRAM. AFTER 5 HOURS OF WATER AND AIR SCRUBBING
~~A ONE CUBIC FOOT~~ TEST SPECIMAN THE CLEANING EFFLUENT WAS STILL
CARRYING A VERY HIGH 5.0 PPM OF IRON. THE TURBIDITY
ALSO REMAINED HIGH. IT PROVES BEYOND DOUBT THE IRON FILTERS
IN THE OLD ALASKA TREATMENT PLANT WERE TOTALLY INCAPACITATED.

26/1946Z JUN 72 GULA

23JUN72 18 03Z

ULA0468
RR GSTS
DE GULA 0468
23/1823Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO H DICKSON A LATZKO R MOLLERICK CODE 822 E THOMAS NSG

H. GALL SENDS
SUBJECT ALASKA POTABLE WATER
THURSDAY 22 JUNE 72
UNLOADING MANGANESE GREEN SAND FROM FILTERS. TESTS SHOW ENTIRE DEPTH OF THE FILTERING MEDIA CHARGED WITH IRON & SILT TO A MAXIMUM DEGREE. BACKWASHING A FILTER BED SO CONTAMINATED IS OF LITTLE VALUE. ALL FILTER MEDIA WILL BE REMOVED SCRUBBED, REACTIVATED AND REUSED.
NOTE: DISTRIBUTION ON SUBSEQUENT MESSAGES WILL BE MR BROWN MR MOLLERICK AND MR THOMAS

23/1830Z JUN 72 GULA

ULA 005B
RR GSTS
DE GULA 005B
22/0228Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO CODE 822 H DICKSON A LATZKO R MOLLERICK E THOMAS NSG

SUBJECT: ALASKA POTABLE WATER WEDNESDAY 21 JUNE 72
TWENTY FIVE PERCENT OF ALL NECESSARY REAGENTS RECENTLY ORDERED HAVE ARRIVED. WE HAVE CONFIRMATION; THE REMAINING SEVENTY FIVE PERCENT HAS BEEN SHIPPED BY AIR. WORK TODAY CONCERNED THE PLACEMENT OF FIVE SAMPLING TAPS IN THE NEW TREATMENT PLANT AND ARRANGING THE MAJOR EQUIPMENT COMPONENTS FOR THE OLD ALASKA WATER TREATMENT PLANT FOR REBUILDING. UNLOADING THE CHARGES FROM THE OLD FILTERS IS MUCH MORE TIME CONSUMING THAN FIRST ESTIMATED.
H. GALL SENDS

22/0232Z JUN 72 GULA

21 JUN 72 02 37z

ULA008B
RR GSTS
DE GULA 008B
21/0210Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO H DICKSON A LATZKO R MOLLERICK CODE 822 E. THOMAS NSG

SUBJECT: ALASKA POTABLE WATER TUESDAY 20 JUNE 1972
ALL LOCAL EFFORT POSSIBLE DIRECTED TOWARD EARLIEST DELIVERY OF NEEDED CHEMICAL REAGENTS. THE COLORS FAR EXPANDING THE PH RANGE ARRIVED. WORKED OUT MINOR MODIFICATION PLANS TO PERMIT PERSONNEL TO USE UNTREATED WELL WATERS FOR LAWNS, EQUIPMENT, WASHING, ETC. EVEN WHEN MODIFIED, THE PLANTS WOULD NOT BE CAPABLE OF GOOD SUSTAINED PERFORMANCE IF REQUIRED TO CONDITION THE WATER THAT IS USED ON THE LAWNS, TO WASH ROAD EQUIPMENT, ETC. THE STADIR AND MR. ROBINSON CONCUR. PORTABLE LABORATORY BENCH FOR CHEMICAL TEST SERIES WAS COMPLETED TODAY.
H. GALL SENDS.

21/0220Z JUN 72 GULA

V
ULA007A
RR GSTS
DE GULA 007
20/0110Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO H DICKSON/A LATZKO/R MOLLERICK CODE 822/E THOMAS/NSG

SUBJECT: ALASKA POTABLE WATER
MONDAY 19 JUNE 1972, REFERENCE TODAY'S SCAMA CALL ROBINSON - MOLLERICK - GALL
EVERYTHING APPEARS TO BE ALIGNING ITSELF TO PERMIT ACTUAL MODIFICATIONS AND CHEMICAL TESTING TO BEGIN ON SUBJECT PLANTS. THE TOTAL EFFORT WILL GET UNDERWAY ONCE THE CHEMICAL REAGENTS ARRIVE AND PLUMBERS BECOME AVAILABLE. TODAY WE LAID OUT THE WORK DETAILS INVOLVED IN DISMANTLING THE DEFUNCT PLANT AND REWORKING ITS EQUIPMENT.
GALL SENDS.

20/0114Z JUN 72 GULA

20 JUNE 01 40Z

ULA008A
RR GSTS
DE GULA 008
20/0111Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO A HUNTRESS/E MORTON/H DICKSON/A LATZKO/R MOLLERICK CODE 822/
E THOMAS NSG

SUBJECT ALASKA POTABLE WATER. SUMMARY, WEEK OF 12 JUNE 1972.
REPORTED TO STATION 2:00 P.M., 12 JUNE 1972. TOTAL HOURS ON STATION
DURING REPORTING WEEK 35:00. TIME UTILIZED IN PINPOINTING DEFICIENCY
ITEMS SUCH AS CHEMICAL REAGENTS, BULK CHEMICALS AND TEST EQUIPMENT;
IN SETTING UP SCHEDULES FOR CHEMCIAL TESTS AND MODIFICATION WORK
IN FOUR WATER TREATMENT PLANTS AND COMPLETING THE SCHEMATIC DESIGN
OF THE MODIFICATIONS TO THE MINITRACK PLANT. THERE WERE NO MAJOR
PROBLEMS ENCOUNTERED. ALL STATION PERSONNEL ARE INTERESTED IN
IMPROVING THE POTABILITY OF THE WATER AND EVERYONE IS VERY
COOPERATIVE.
N. BALL SENDS.

20/0123Z JUN 72 GULA

17 Jun 72 03 14z

U
ULA009B
RR GSTS
DE GULA 009B
17/0257Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO H DICKSON/A LATZKO/R MOLLERICK CODE 822/E THOMAS/NSG

SUBJECT: ALASKA POTABLE WATER
FRIDAY 16 JUNE 1972
COMPLETED SCHEMATIC DRAWING OF MODIFICATIONS NECESSARY TO MINITRACK WATER TREATMENT PLANT TO ACHIEVE AN UP-TO-DATE SYSTEM. SURFACE SCUM SKIMMER BLOWDOWN AND BOTTOM AREA BLOWDOWN CAPABILITIES IN THE RECEIVER TANK ARE THE ONLY ITEMS THAT ARE ADDED TO A CLASSIC STYLE WATER TREATMENT PLANT OF THIS SIZE FOR THIS TYPE OF RAW WATER. ALL ITEMS REQUIRED FOR MODIFICATION ARE ON HAND. WILL BEGIN TEST AND BALANCE SERIES ON NEW TREATMENT PLANT UPON ARRIVAL OF REAGENTS ORDERED BY STADIR ON 13 JUNE 72.
GALL SENDS

17/0312Z JUN 72 GULA

16JUN72 01 32

ULA007A
RR GSTS
DE GULA 007
16/0117Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/H DICKSON/A LATZKO/R MOLLERICK CODE 822/E THOMAS/NSG

SUBJECT: ALASKA POTABLE WATER
THURSDAY: REFERENCE TODAY'S SCAMA CALLS
WILL RUN CHEMICAL TESTS ON THE NEW TREATMENT PLANT TO FORMULATE CHEMICAL FEED, REGENERATION AND BACKWASH CYCLES. WILL RUN CHEMICAL TEST SERIES ON THE THREE OLD WELLS. NEED ASSISTANCE TO RENOVATE AND MODIFY THE OLD WELL TREATMENT PLANTS USING EQUIPMENT NOW ON HAND. MODIFICATIONS COULD BE ACCOMPLISHED AT THIS TIME IF ARRANGEMENTS CAN BE MADE.
H. GALL SENDS

16/0120Z JUN 72 GULA

19 JUN 72 18 43z

GUL 246A
RR GULA
DE GSTS 018
19/1458Z
FM PHYSICAL PLANT ENGINEERING BRANCH CODE 822
TO GULA/STADIR
INFO DLD/N HELLER CODE 822

SUBJ: ALASKA POTABLE WATER
REF: UR 14/1800Z JUN 1972
1. SCALE CLEEN WAS ON PR.
2. BORATE NITRITE (537) WAS NOT ON PR, HOWEVER, DEARBORN 537
   ~~CHROMATE~~ FREE LOW TOXICITY CORROSION INHIBITOR WAS ON PR.
3. PR HAS NOT BEEN PLACED BY PROCUREMENT.
THEY WILL RUSH PR THIS WEEK AND HAVE DEARBORN SHIP DIRECTLY TO
ALASKA.

19/1641Z JUN 72 GTS

Roy—

Tomorrow on Wed DOW # will
be sent to you. Tell him to
communicate.

15 Jun 72

ULA058A
RR GSTS
DE GULA 058
15/1832Z
FM STADIR/ULA
TO GSTS/L BROWN CODE 822
INFO GSTS/H DICKSON/A LATZKO/R MOLLERICK CODE 822/E THOMAS/NSG

SUBJECT: ALASKA POTABLE WATER
CONTRACTOR WORK ON THE NEW ALASKA WELL TREATMENT PLANT CONTINUED TODAY, WEDNESDAY.
ALL NECESSARY SAMPLING POINTS IN THE THREE OLD TREATMENT PLANTS ARE NOW PLOTTED AND PROCUREMENT OF SAMPLING TAPS IS UNDERWAY.
STUDY OF MINITRACK TREATMENT PLANT INDICATES FILTERS AND SOFTENERS MUST BE DISMANTLED, CLEANED AND RECHARGED. SOME ADDITIONAL PIPING AND EQUIPMENT ARE REQUIRED. AFTER AUTHENTICATING CHEMICAL TESTS WE INTEND TO PRESS ON WITH TH MODIFICATIONS. MR. J. ROBINSON CODE 822 AND I FEEL THE BEST SOURCE OF THE NEEDED ADDITIONAL EQUIPMENT IS THE OLD ALASKA WELL TREATMENT PLANT. IT WILL BE USELESS ~~AND~~ WHEN THE NEW PLANT IS IN OPERATION.
QUESTION: DO WE HAVE PERMISSION TO DISMANTLE THE OLD ALASKA WELL PLANT-THE NEW ONE IS ON THE LINE-AND USE THE EQUIPMENT AS REQUIRED TO MODIFY THE MINITRACK, GILMOR, AND R&RR PLANTS?
H. GALL SENDS

15/1838Z JUN 72 GULA

14 Jun 72 18 14z

ULA048B
RR GSTS
DE GULA 048B
14/1800Z
FM STADIR/ULA
TO L BROWN CODE 822
INFO H DICKSON CODE 822/A LATZKO CODE 822/R MOLLERICK CODE 822/
E C THOMAS NSG

SUBJECT: ALASKA POTABLE WATER
DISCUSSED POTABLE WATER TREATMENT PLANT PROGRAM WITH
STADIR. TREATMENT PLANT PRIORITIES ARE AS FOLLOWS:
1. ALASKA
2. MINITRACK
3. GILMORE
4. R&RR
STADIR APPROVED IMMEDIATE PROCUREMENT OF THE NECESSARY
CHEMICAL REAGENTS AND MINOR ITEMS NEEDED FOR THE CURRENT
WORK. CONTRACTOR ATTEMPTING TO GET THE NEW WATER TREATMENT
PLANT ON THE LINE. CHEMICAL TEST SERIES WILL BE RUN
AFTER CONTRACTOR COMPLETES HIS WORK.
QUESTION: IS THERE ANY SCALE CLEEN AND BORATE NITRITE (537)
ON ORDER FROM DEARBORN CHEMICAL FOR THE ALASKA STATION?
ESTIMATE P.R. MAY HAVE BEEN DATED 3RD WEEK IN APRIL.
H. GALL SENDS

14/1812Z JUN 72 GULA

APPENDIX H. PICTURES

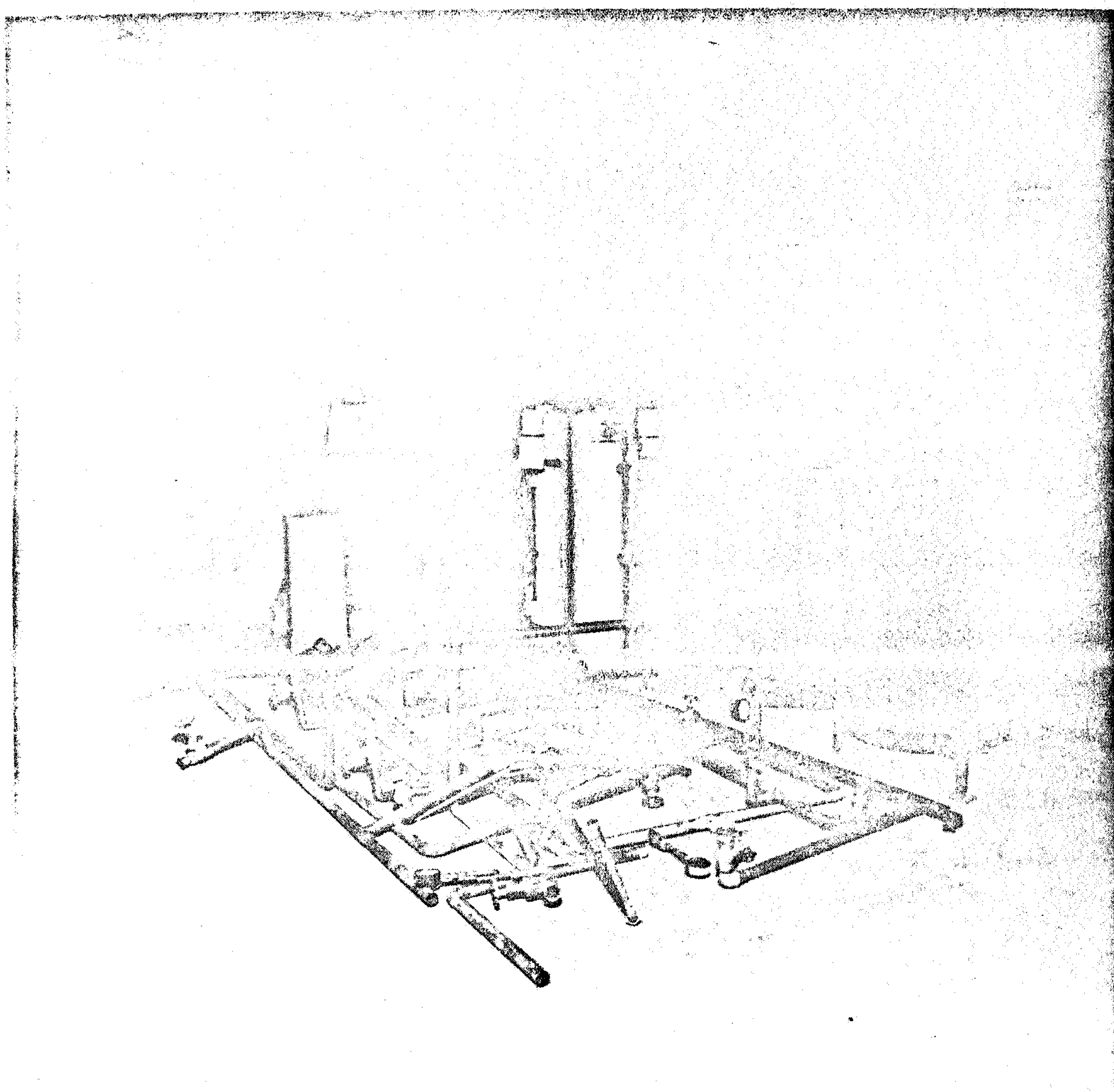


Figure H-1. Dismantling and Rehabilitation Work on Old Water Treatment Plants, Alaska (View 1)

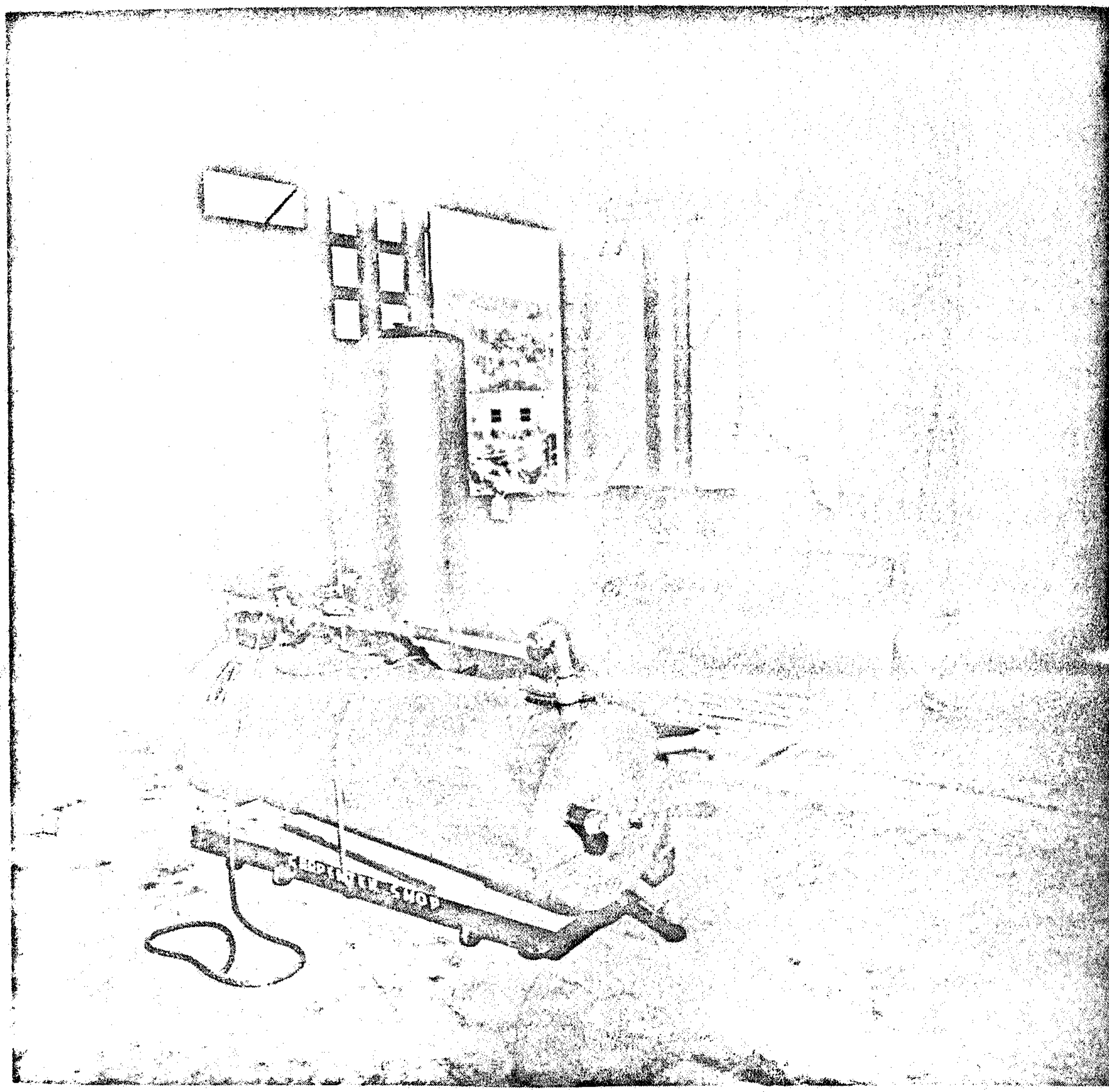


Figure H-1. Dismantling and Rehabilitation Work on Old Water Treatment Plants, Alaska (View 2)

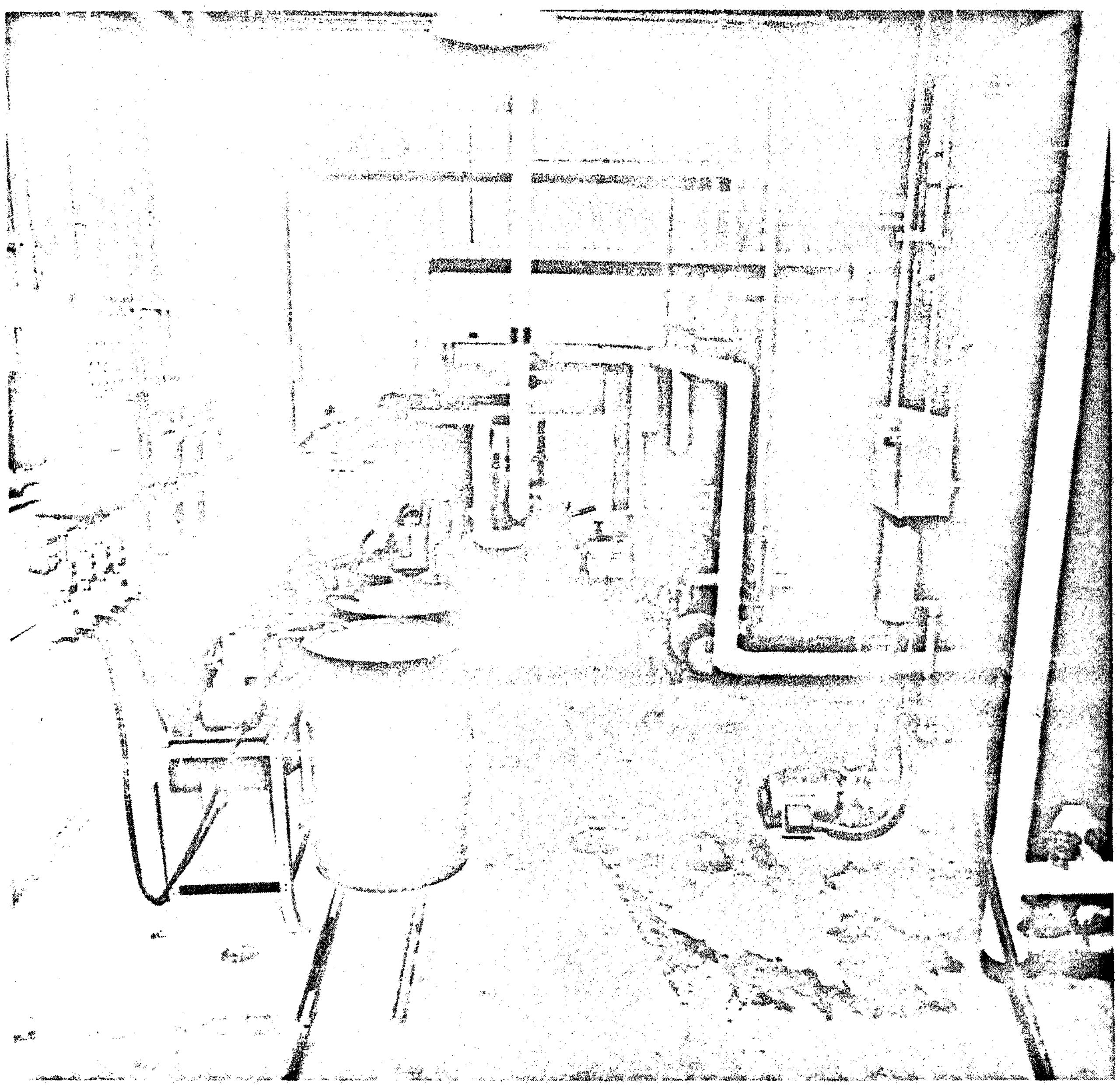


Figure H-2. Alaska Building New Plant, Before Modification

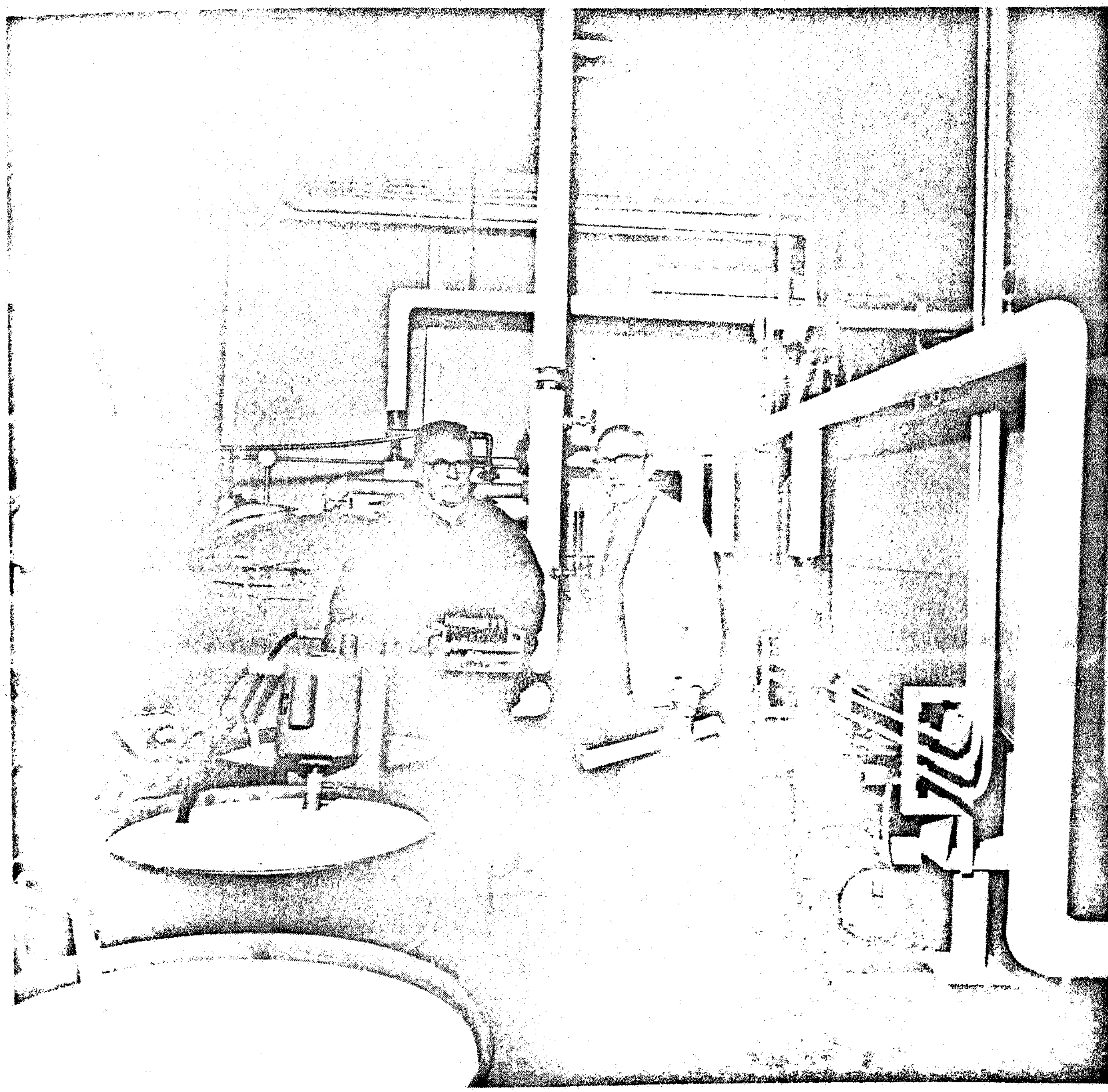


Figure H-3. Alaska Building New Plant, After Modification

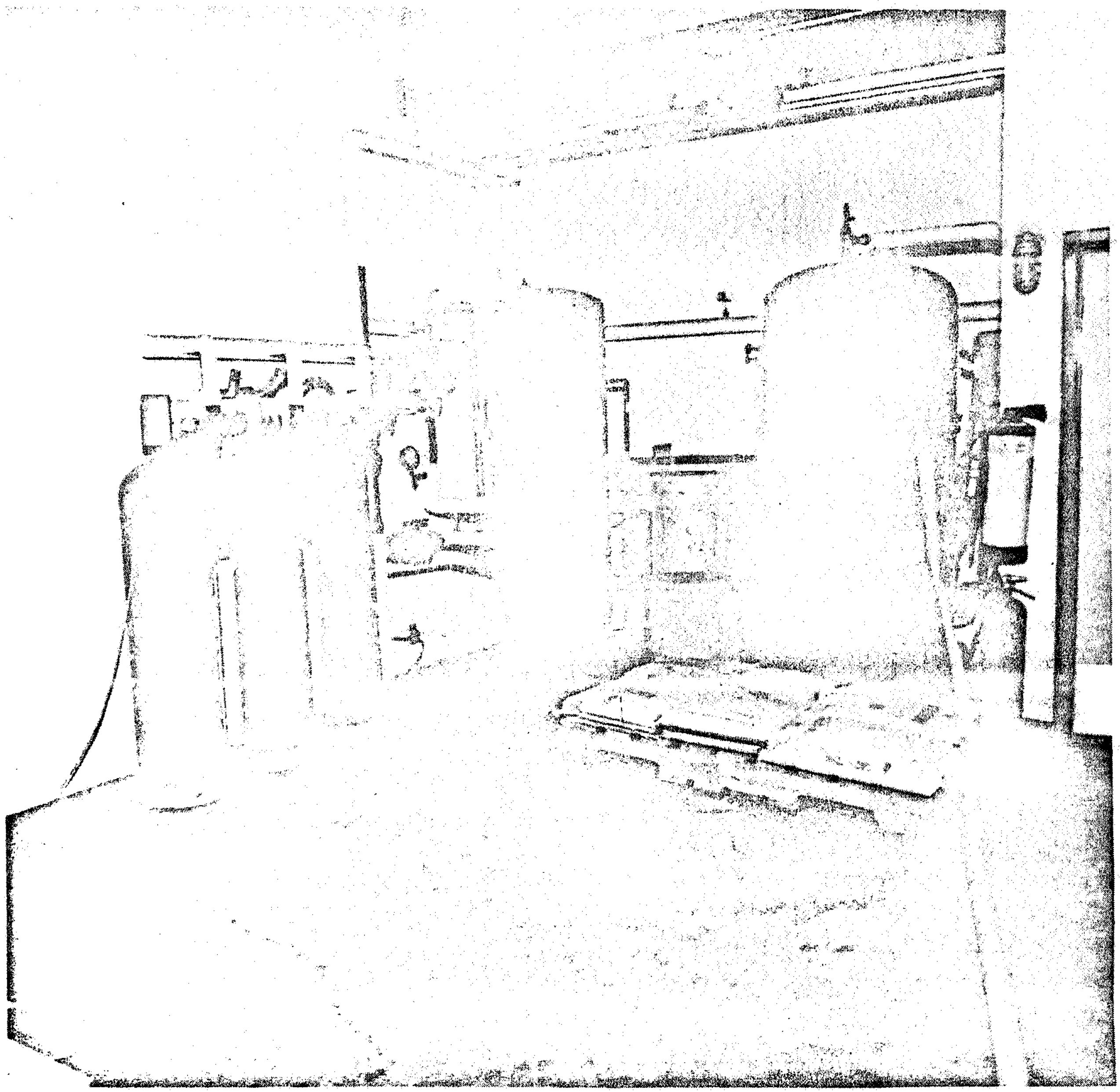


Figure H-4. Minitrack Old Plant, West

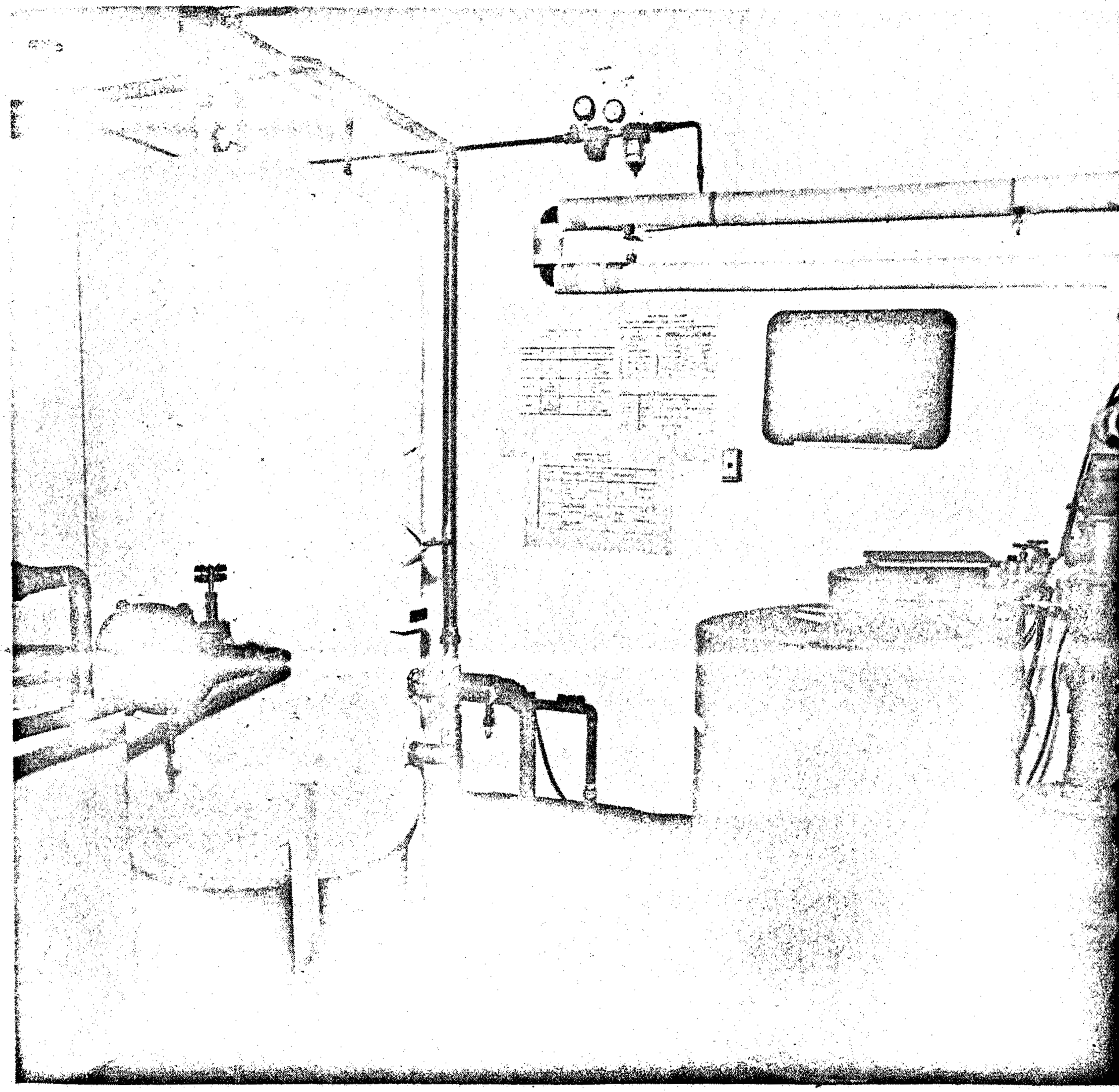


Figure H-5. Minitrack New Plant, West

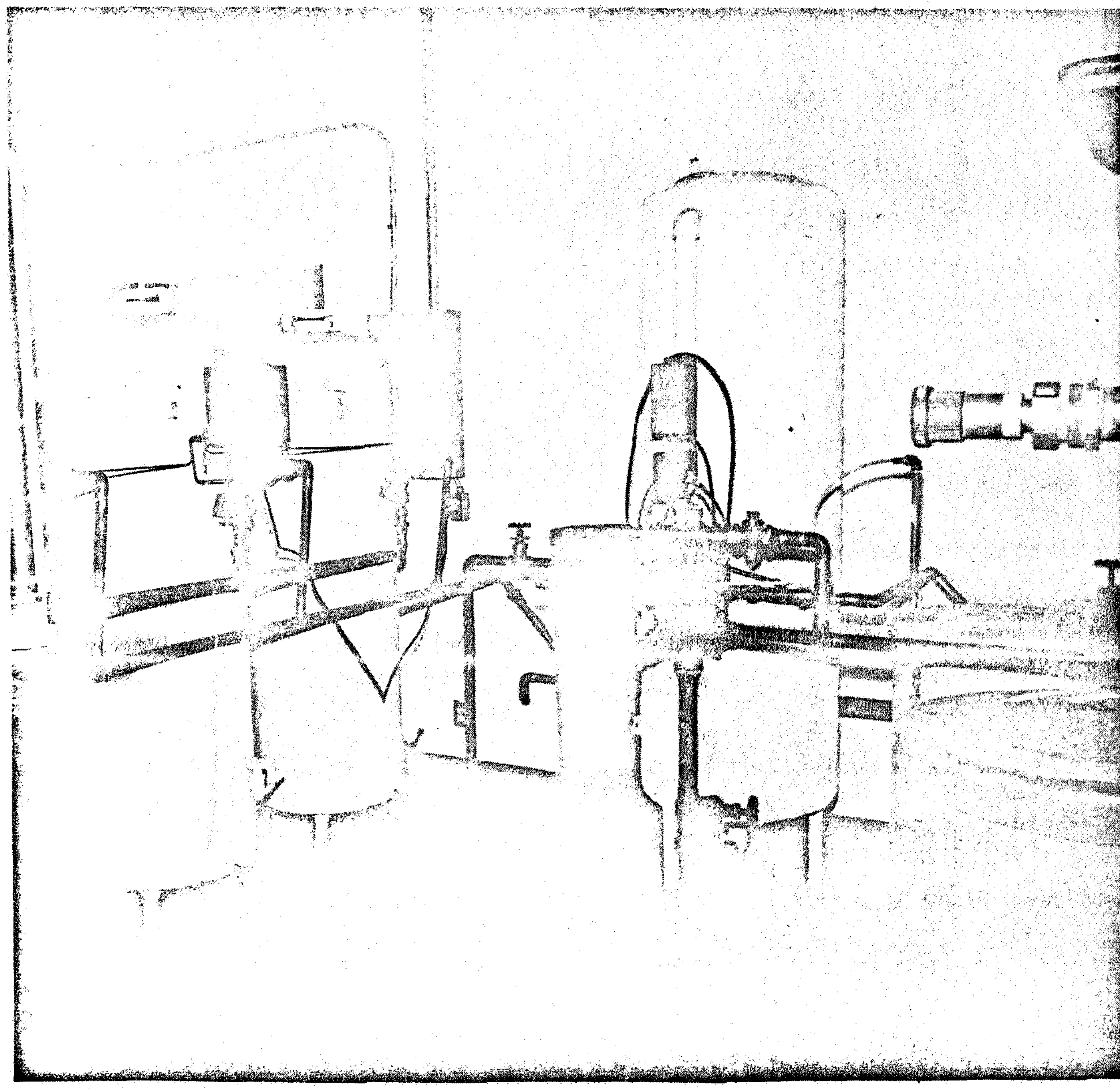


Figure H-6. Minitrack New Plant, South

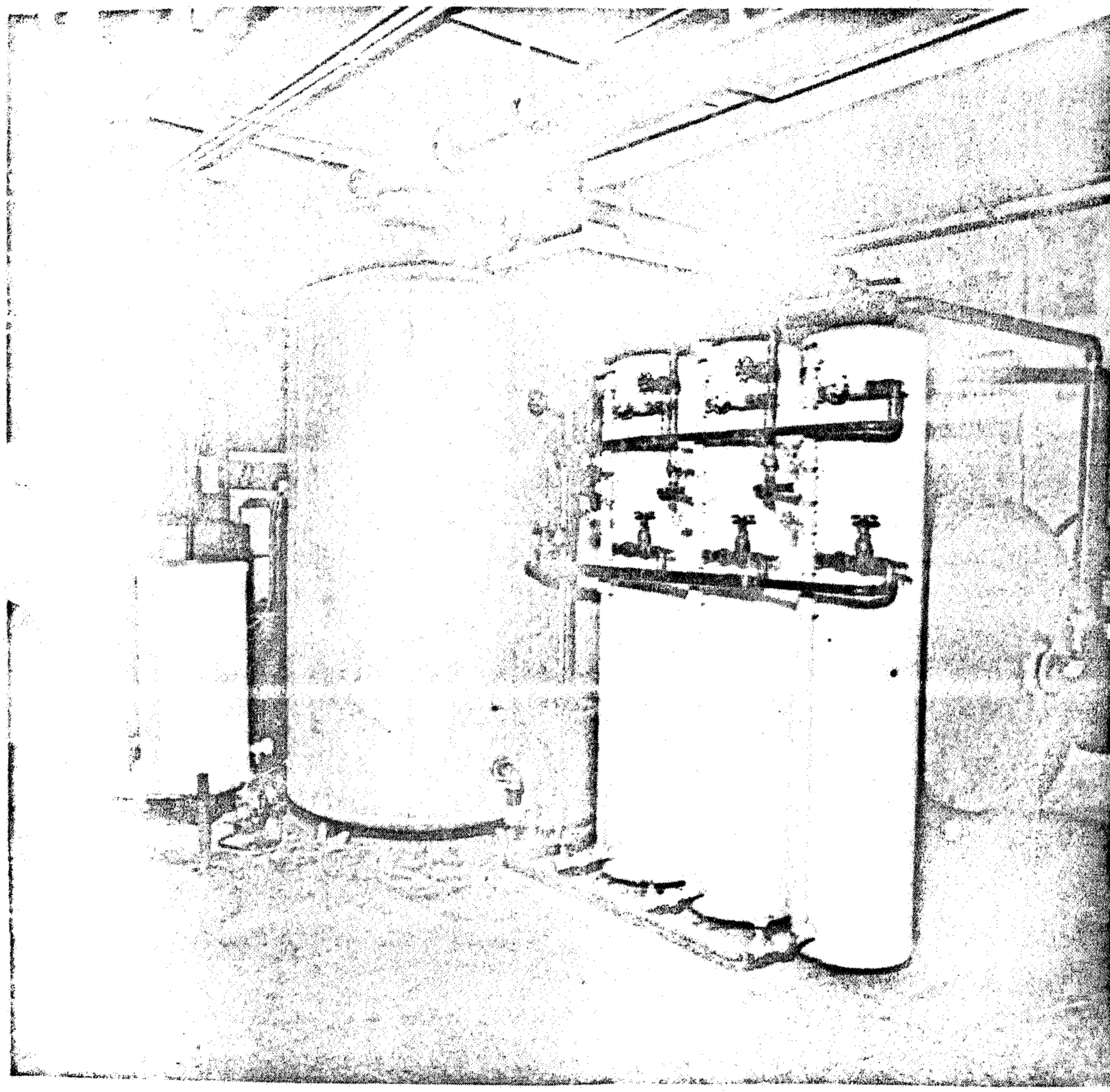


Figure H-7. Gilmore Old Plant, North

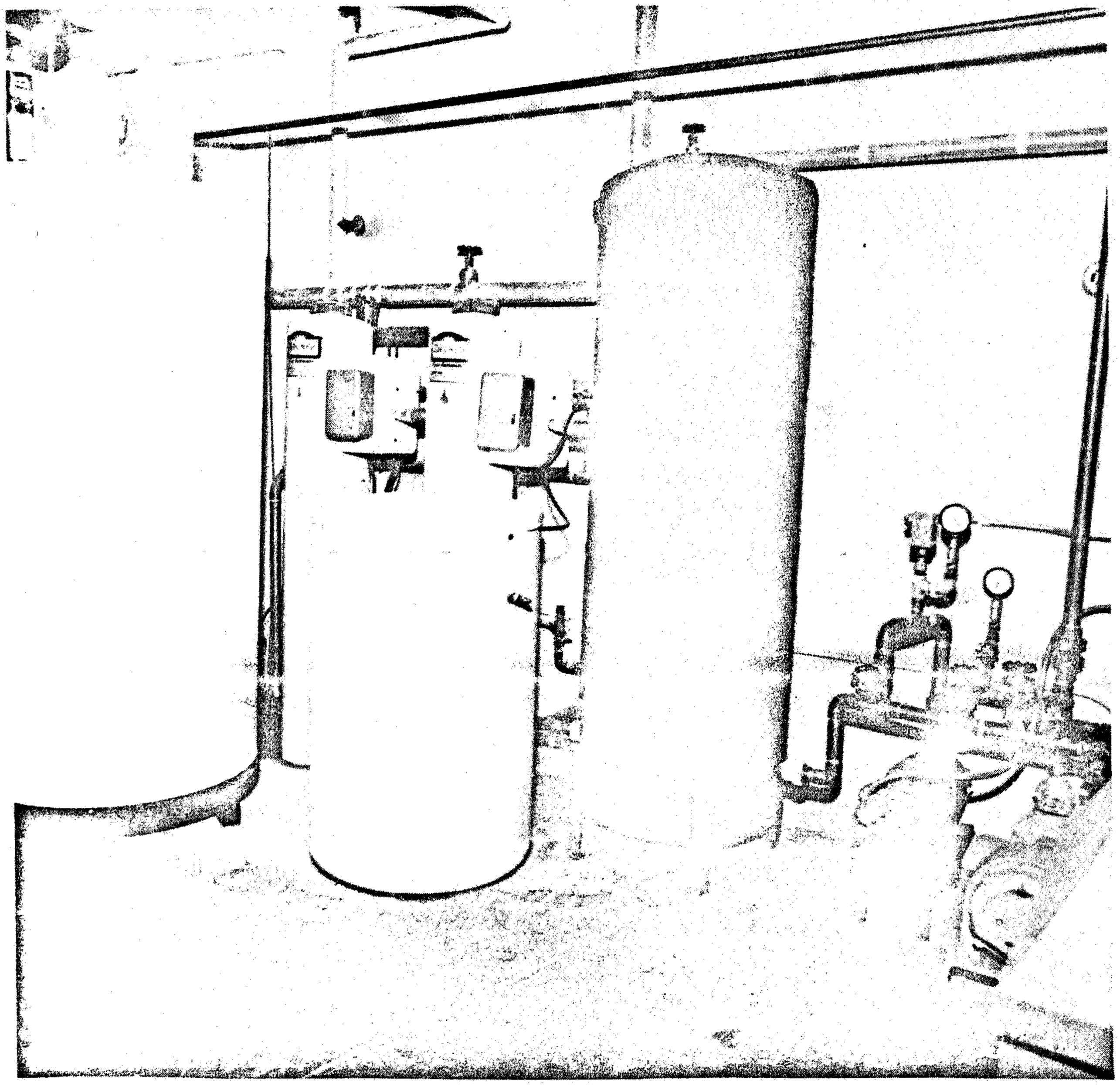


Figure H-8. Gilmore Old Plant, South

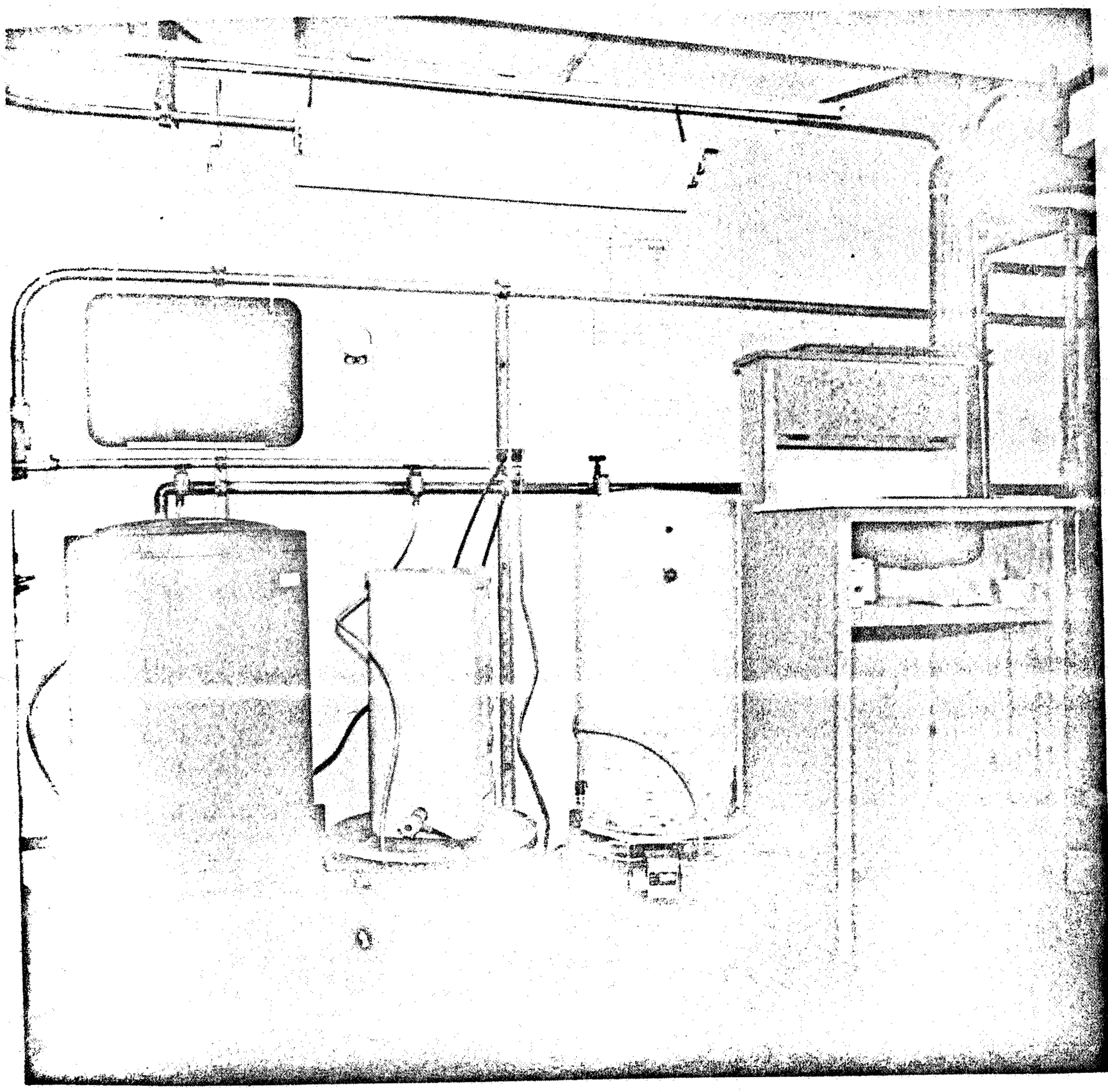


Figure H-9. Gilmore New Plant, North

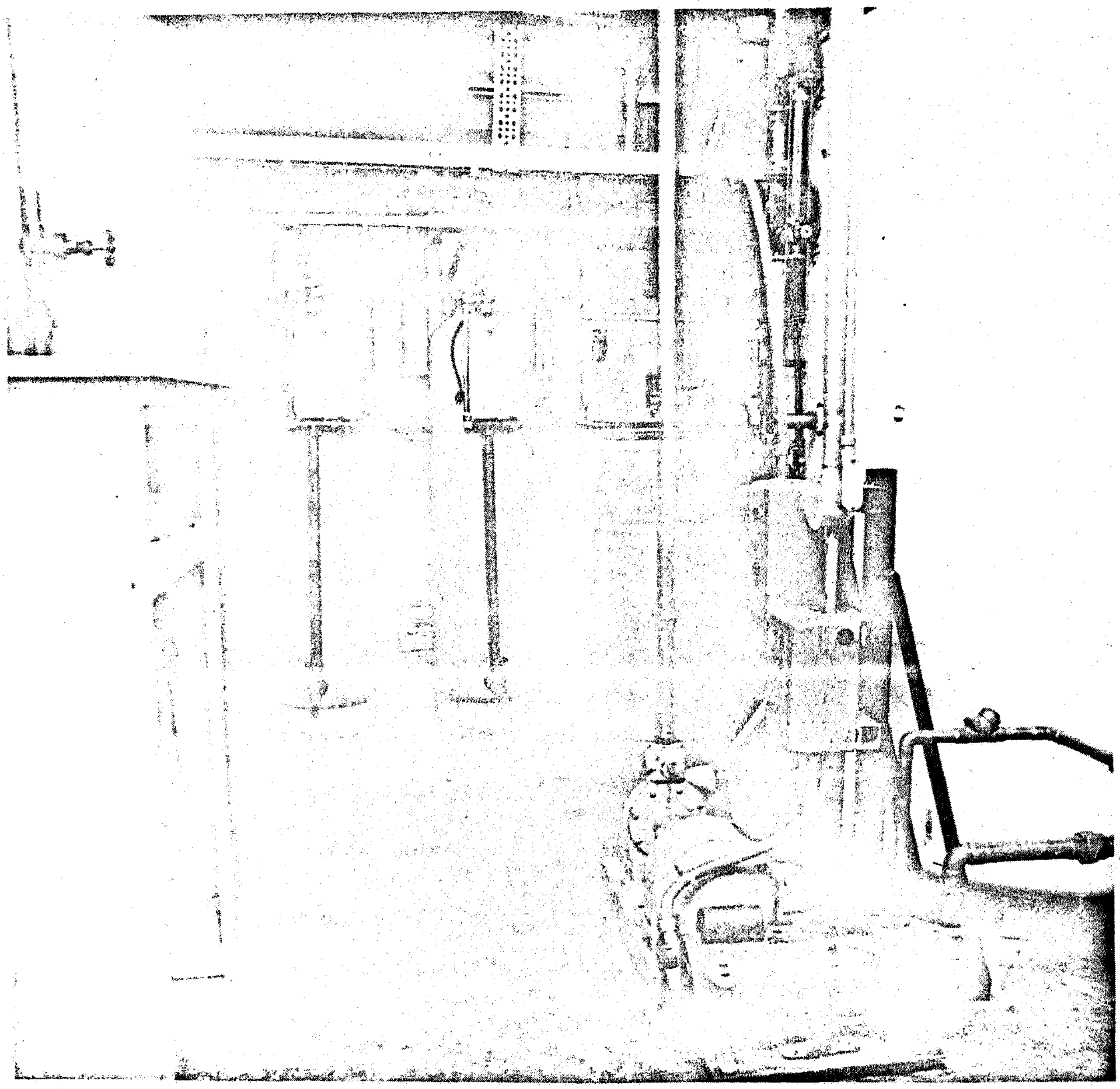


Figure H-10. Gilmore New Plant, Interior View East

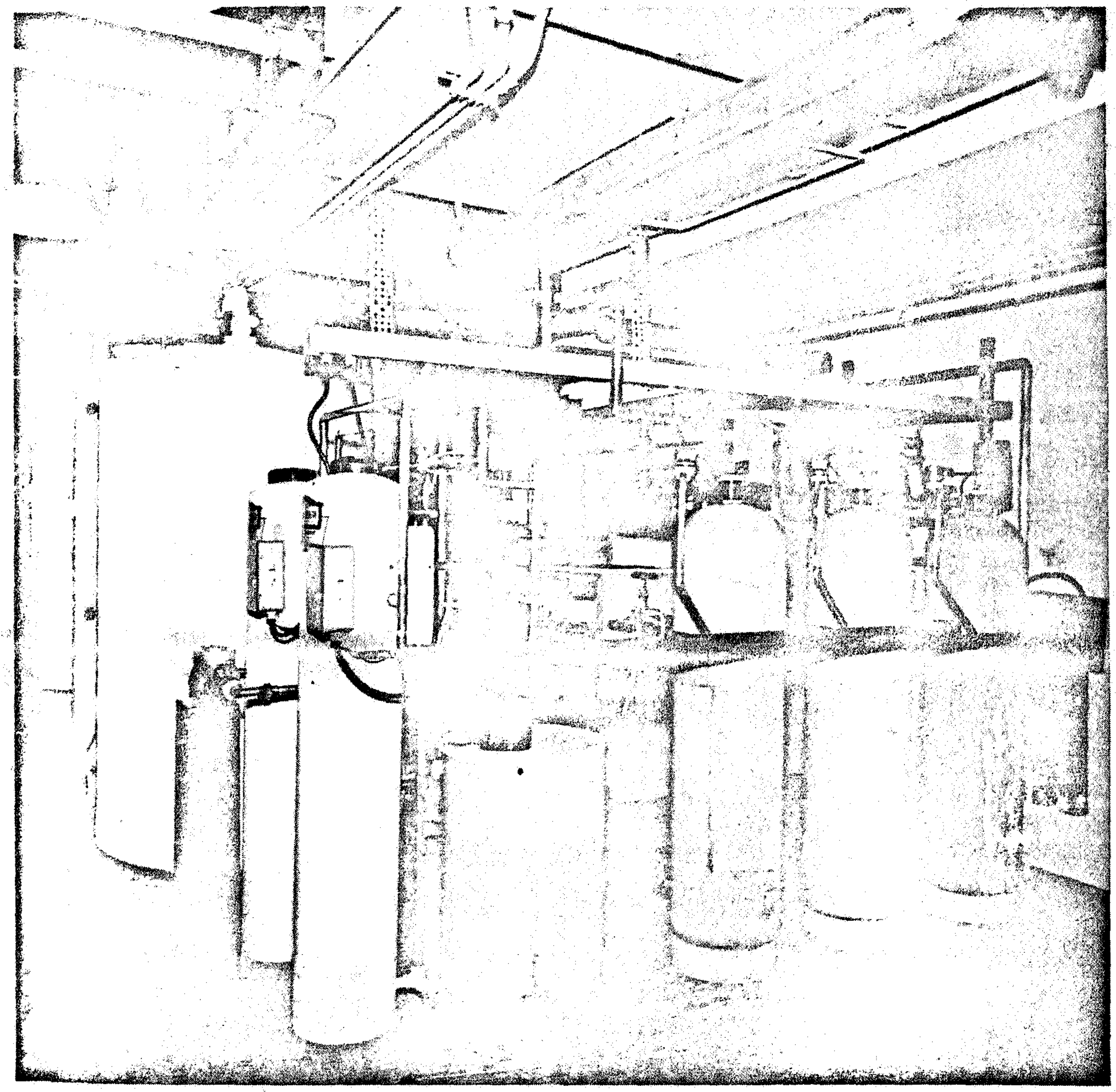


Figure H-11. Gilmore New Plant, Exterior View West

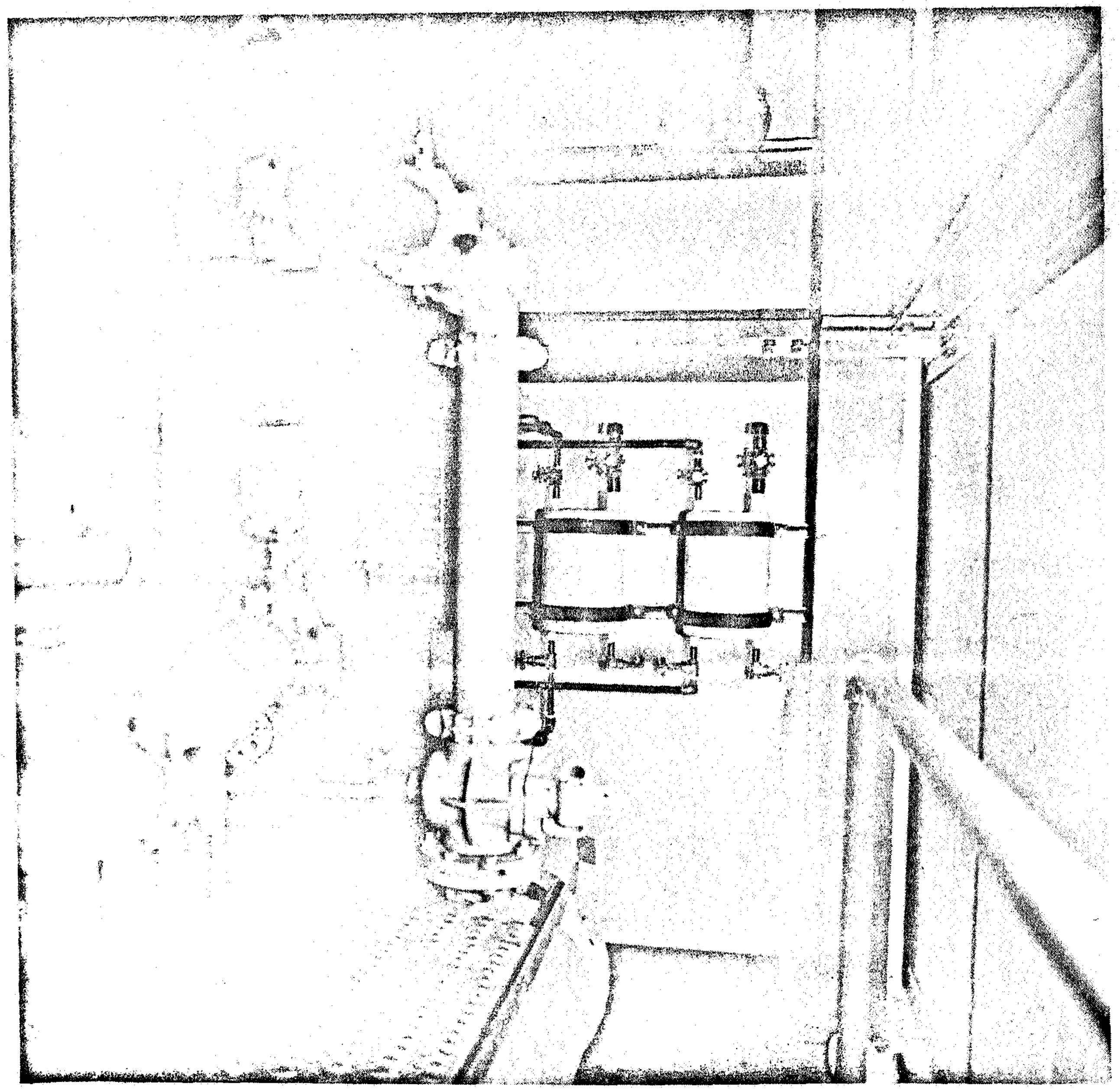


Figure H-12. Diesel Coolant Circuits By-Pass Feeders (for Chemical Testing and Treating Cooling Water)

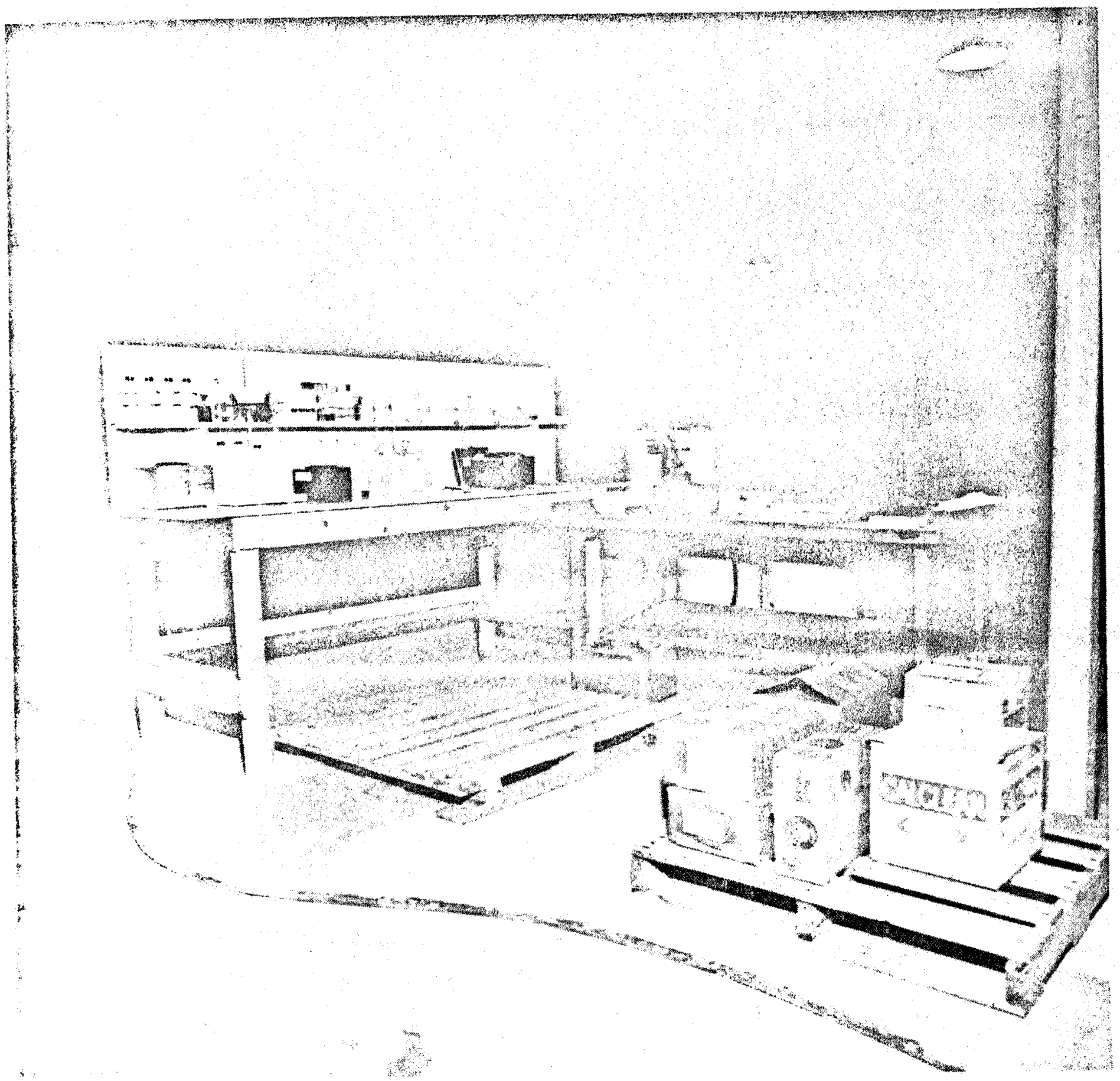


Figure H-13. Portable Laboratory